GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 15, 2004, 16:25:44 ; Search time 78.3582 Seconds
(without alignments)
540.877 Million cell updates/sec

Title: US-09-423-100-7
Perfect score: 797
Sequence: 1 MFPTIPLSRLFDNAMLRAHR.....IVEQCCTSICSLYQLENYCN 150

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1586107 seqs, 282547505 residues

Total number of hits satisfying chosen parameters: 1586107

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_29Jan04:*
1: geneseqp1980s:*
2: geneseqp1990s:*
3: geneseqp2000s:*
4: geneseqp2001s:*
5: geneseqp2002s:*
6: geneseqp2003as:*
7: geneseqp2003bs:*
8: geneseqp2004s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	797	100.0	150	2	AAY42861	Aay42861 Chimeric
2	555.5	69.7	107	2	AAY42860	Aay42860 hGH-mini-
3	470	59.0	92	2	AAY42856	Aay42856 Human gro
4	470	59.0	134	2	AAW92265	Aaw92265 Human ant
5	470	59.0	191	5	ABG94861	Abg94861 Human gro
6	466	58.5	192	1	AAP90129	Aap90129 Human gro
7	466	58.5	192	2	AAW92264	Aaw92264 Human ant
8	465	58.3	140	1	AAP91041	Aap91041 Human gro
9	465	58.3	261	1	AAP91299	Aap91299 Human ner

10	465	58.3	262	2	AAR11740	Aar11740 Human gro
11	465	58.3	310	2	AAR03255	Aar03255 Fusion pr
12	464	58.2	191	5	ABG31862	Abg31862 Mature hu
13	463	58.1	191	5	ABG94860	Abg94860 Human gro
14	463	58.1	191	5	ABG94977	Abg94977 Human gro
15	462	58.0	144	2	AAR05313	Aar05313 Segment o
16	462	58.0	191	5	ABG94975	Abg94975 Human gro
17	462	58.0	191	5	ABG94976	Abg94976 Human gro
18	462	58.0	262	1	AAP61033	Aap61033 Human bet
19	461	57.8	191	2	AAO20110	Aao20110 Protein s
20	461	57.8	191	2	AAY04396	Aay04396 Natural h
21	461	57.8	191	3	AAY78425	Aay78425 Human gro
22	461	57.8	191	4	AAO17485	Aao17485 Human gro
23	461	57.8	191	4	AAO17486	Aao17486 Human gro
24	461	57.8	191	5	ABG31865	Abg31865 Mature hu
25	461	57.8	191	5	ABG31863	Abg31863 Mature hu
26	461	57.8	191	5	ABG31860	Abg31860 Mature hu
27	461	57.8	191	5	ABG31866	Abg31866 Mature hu
28	461	57.8	191	5	ABG31857	Abg31857 Mature hu
29	461	57.8	191	5	ABG31861	Abg31861 Mature hu
30	461	57.8	191	5	ABG94932	Abg94932 Human gro
31	461	57.8	191	5	ABG94967	Abg94967 Human gro
32	461	57.8	191	5	ABG94925	Abg94925 Human gro
33	461	57.8	191	5	ABG94933	Abg94933 Human gro
34	461	57.8	191	5	ABG94940	Abg94940 Human gro
35	461	57.8	191	5	ABG94964	Abg94964 Human gro
36	461	57.8	191	5	ABG94912	Abg94912 Human gro
37	461	57.8	191	5	ABG94919	Abg94919 Human gro
38	461	57.8	191	5	ABG94863	Abg94863 Human gro
39	461	57.8	191	5	ABG94910	Abg94910 Human gro
40	461	57.8	191	5	ABG94920	Abg94920 Human gro
41	461	57.8	191	5	ABG94923	Abg94923 Human gro
42	461	57.8	191	5	ABG94939	Abg94939 Human gro
43	461	57.8	191	5	ABG94978	Abg94978 Human gro
44	461	57.8	191	5	ABG94913	Abg94913 Human gro
45	461	57.8	191	5	ABG94924	Abg94924 Human gro

ALIGNMENTS

RESULT 1
AAY42861
ID AAY42861 standard; protein; 150 AA.
XX
AC AAY42861;
XX
DT 19-JAN-2000 (first entry)
XX
DE Chimeric protein, SEQ ID 7.
XX
KW Insulin; precursor; growth hormone; chaperone; intramolecular; folding;
KW conformation; chimeric protein; cleavable; recombinant; production;
KW yield.
XX
OS Synthetic.
OS Homo sapiens.

XX
PN WO9950302-A1.
XX
PD 07-OCT-1999.
XX
PF 31-MAR-1998; 98WO-CN000052.
XX
PR 31-MAR-1998; 98WO-CN000052.
XX
PA (TONG-) TONGHUA GANTECH BIOTECHNOLOGY LTD.
XX
PI Gan Z;
XX
DR WPI; 1999-610839/52.
XX
PT New chimeric proteins containing human growth hormone fragment, used
PT particularly for the production of human insulin.
XX
PS Claim 14; Page 30-31; 46pp; English.
XX
CC This sequence represents a chimeric protein, which contains an N-terminal
CC fragment of human growth hormone (hGH) of the sequence given in AAY42856,
CC a cleavable peptide linker (AAY42857), and a human insulin precursor
CC comprising insulin A and B chains (AAY42859). The hGH portion of the
CC chimeric protein acts as an intramolecular chaperone (IMC) for the
CC insulin precursor, enabling it to fold correctly. The cleavable peptide
CC linker has a C-terminal Arg residue which enables the hGH portion of the
CC chimeric protein to be removed after folding has taken place. Production
CC of recombinant human insulin via an hGH-proinsulin chimeric protein can
CC provide human insulin with correctly linked cysteine bridges with fewer
CC necessary procedural steps, and hence resulting in a higher yield of
CC human insulin. The IMC sequences not only protect insulin sequences from
CC intracellular degradation by a microorganism host, but also promote the
CC folding of the fused insulin precursor, facilitate the solubility of the
CC fusion protein and decrease the intermolecular interactions among the
CC fusion proteins, thus allowing folding of the fused insulin precursor at
CC commercially useful high concentrations. The procedural steps of cyanogen
CC bromide cleavage, oxidative sulphitolysis and related purification steps
CC can thus be eliminated, along with the use of high concentrations of
CC mercaptan or the use of hydrophobic absorbent resins
XX
SQ Sequence 150 AA;

Query Match 100.0%; Score 797; DB 2; Length 150;
Best Local Similarity 100.0%; Pred. No. 1.1e-45;
Matches 150; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120

Qy        121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150
              ||||||||||||||||||||||||||||||
```

Db 121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150

RESULT 2
AAY42860
ID AAY42860 standard; protein; 107 AA.
XX
AC AAY42860;
XX
DT 19-JAN-2000 (first entry)
XX
DE hGH-mini-proinsulin chimeric protein.
XX
KW Insulin; precursor; growth hormone; chaperone; intramolecular; folding;
KW conformation; chimeric protein; cleavable; recombinant; production;
KW yield.
XX
OS Synthetic.
OS Homo sapiens.
XX
PN WO9950302-A1.
XX
PD 07-OCT-1999.
XX
PF 31-MAR-1998; 98WO-CN000052.
XX
PR 31-MAR-1998; 98WO-CN000052.
XX
PA (TONG-) TONGHUA GANTECH BIOTECHNOLOGY LTD.
XX
PI Gan Z;
XX
DR WPI; 1999-610839/52.
XX
PT New chimeric proteins containing human growth hormone fragment, used
PT particularly for the production of human insulin.
XX
PS Claim 13; Page 30; 46pp; English.
XX
CC This sequence represents a chimeric protein, hGH-mini-proinsulin. This
CC chimeric protein contains an N-terminal fragment of human growth hormone
CC (hGH) of the sequence given in AAY42855, a cleavable peptide linker
CC (AAY42857), and a human insulin precursor comprising insulin A and B
CC chains (AAY42859). The hGH portion of the chimeric protein acts as an
CC intramolecular chaperone (IMC) for the insulin precursor, enabling it to
CC fold correctly. The cleavable peptide linker has a C-terminal Arg residue
CC which enables the hGH portion of the chimeric protein to be removed after
CC folding has taken place. Production of recombinant human insulin via an
CC hGH-proinsulin chimeric protein can provide human insulin with correctly
CC linked cysteine bridges with fewer necessary procedural steps, and hence
CC resulting in a higher yield of human insulin. The IMC sequences not only
CC protect insulin sequences from intracellular degradation by a
CC microorganism host, but also promote the folding of the fused insulin
CC precursor, facilitate the solubility of the fusion protein and decrease
CC the intermolecular interactions among the fusion proteins, thus allowing
CC folding of the fused insulin precursor at commercially useful high
CC concentrations. The procedural steps of cyanogen bromide cleavage,

CC oxidative sulphitolysis and related purification steps can thus be
CC eliminated, along with the use of high concentrations of mercaptan or the
CC use of hydrophobic absorbent resins
XX
SQ Sequence 107 AA;

Query Match 69.7%; Score 555.5; DB 2; Length 107;
Best Local Similarity 71.3%; Pred. No. 8.3e-30;
Matches 107; Conservative 0; Mismatches 0; Indels 43; Gaps 1;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNP---------- 49

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120
                                             ||||||||||||||||||||||||||
Db         50 ---------------------------------LGTGPRFVNQHLCGSHLVEALYLVCGER 77

Qy        121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150
              ||||||||||||||||||||||||||||||
Db         78 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 107
```

RESULT 3
AAY42856
ID AAY42856 standard; protein; 92 AA.
XX
AC AAY42856;
XX
DT 19-JAN-2000 (first entry)
XX
DE Human growth hormone (hGH) N-terminal fragment #2.
XX
KW Growth hormone; chaperone; intramolecular; insulin; precursor; folding;
KW conformation; chimeric protein; cleavable; recombinant; production;
KW yield.
XX
OS Homo sapiens.
XX
PN WO9950302-A1.
XX
PD 07-OCT-1999.
XX
PF 31-MAR-1998; 98WO-CN000052.
XX
PR 31-MAR-1998; 98WO-CN000052.
XX
PA (TONG-) TONGHUA GANTECH BIOTECHNOLOGY LTD.
XX
PI Gan Z;
XX
DR WPI; 1999-610839/52.
XX
PT New chimeric proteins containing human growth hormone fragment, used
PT particularly for the production of human insulin.
XX
PS Claim 5; Page 28; 46pp; English.

XX
CC This sequence represents an N-terminal fragment of human growth hormone
CC (hGH) which is a component of a chimeric protein (AAY42861) which also
CC contains a human insulin precursor (AAY42859). The hGH portion of the
CC chimeric protein acts as an intramolecular chaperone (IMC) for the
CC insulin precursor, enabling it to fold correctly. A cleavable peptide
CC linker with a C-terminal Arg residue (AAY42857) enables the hGH portion
CC of the chimeric protein to be removed after folding has taken place.
CC Production of recombinant human insulin via an hGH-proinsulin chimeric
CC protein can provide human insulin with correctly linked cysteine bridges
CC with fewer necessary procedural steps, and hence resulting in a higher
CC yield of human insulin. The IMC sequences not only protect insulin
CC sequences from intracellular degradation by a microorganism host, but
CC also promote the folding of the fused insulin precursor, facilitate the
CC solubility of the fusion protein and decrease the intermolecular
CC interactions among the fusion proteins, thus allowing folding of the
CC fused insulin precursor at commercially useful high concentrations. The
CC procedural steps of cyanogen bromide cleavage, oxidative sulphitolysis
CC and related purification steps can thus be eliminated, along with the use
CC of high concentrations of mercaptan or the use of hydrophobic absorbent
CC resins
XX
SQ Sequence 92 AA;

Query Match 59.0%; Score 470; DB 2; Length 92;
Best Local Similarity 100.0%; Pred. No. 3.4e-24;
Matches 92; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              ||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
```

RESULT 4
AAW92265
ID AAW92265 standard; protein; 134 AA.
XX
AC AAW92265;
XX
DT 08-JUN-1999 (first entry)
XX
DE Human anti-angiogenic peptide 16K hGH Met-1Pro133.
XX
KW Human; anti-angiogenic; prolactin; placental lactogen; hPL; angiogenesis;
KW growth hormone; hGH; hGH-V; capillary endothelial cell proliferation;
KW placental vascularisation; pregnancy; treatment; angiogenic disease;
KW tumour; inhibitor; malignant; angiofibroma; arteriovenous malformation;
KW arthritis; atherosclerotic plaques; corneal graft neovascularisation;
KW wound healing; proliferative retinopathy; macular degeneration; trachoma;
KW granulation; glaucoma; ocular; uveitis; fracture; Osler-Weber syndrome;
KW psoriasis; fibroplasia; scleroderma; Kaposi's sarcoma; vascular adhesion;
KW ulcer; leukaemia; reproductive disorder; contraceptive agent;
KW gene therapy; pre-eclampsia; intrauterine growth retardation;

KW placental dysfunction.
XX
OS Homo sapiens.
XX
PN WO9851323-A1.
XX
PD 19-NOV-1998.
XX
PF 12-MAY-1998; 98WO-US009691.
XX
PR 13-MAY-1997; 97US-0046394P.
XX
PA (REGC) UNIV CALIFORNIA.
XX
PI Weiner RI, Martial JA, Struman I, Taylor R;
XX
DR WPI; 1999-045192/04.
DR N-PSDB; AAX01707.
XX
PT New anti-angiogenic peptides - comprise N-terminal fragments of human
PT placental lactogen, human growth hormone, growth hormone variant or human
PT prolactin.
XX
PS Claim 4; Page 49-50; 87pp; English.
XX
CC This invention describes novel human anti-angiogenic peptides derived
CC from 10 to 150 consecutive amino acids selected from the N-terminal end
CC of human placental lactogen (hPL), human growth hormone (hGH), growth
CC hormone variant (hGH-V), or human prolactin. Such peptides (i) inhibit
CC capillary endothelial cell proliferation and organisation (ii) inhibit
CC angiogenesis in chick chorioallantoic membrane and (iii) binds to at
CC least one specific receptor which does not bind an intact full length
CC hGH, hPL, prolactin or hGH-V. The invention also describes a method for
CC diagnosing a probable abnormality of placental vascularisation during
CC pregnancy. The peptides can be used for treating an angiogenic disease in
CC a subject, for inhibiting tumour formation or growth in a patient or for
CC modulating vascularisation of a patient's placenta. In particular, the
CC peptides can be used for preventing or treating e.g. malignant tumours,
CC angiofibroma, arteriovenous malformation, arthritic such as rheumatoid
CC arthritis, atherosclerotic plaques, corneal graft neovascularisation,
CC delayed wound healing, proliferative retinopathy such as diabetic
CC retinopathy, macular degeneration, granulations such as those occurring
CC in haemophilic joints, inappropriate vascularisation in wound healing
CC such as hypertrophic scars or keloid scars, neovascular glaucoma, ocular
CC tumour, uveitis, non-union fractures, Osler-Weber syndrome, psoriasis,
CC pyogenic glaucoma, retrolental fibroplasia, scleroderma, solid tumours,
CC Kaposi's sarcoma, trachoma, vascular adhesions, chronic varicose ulcers,
CC leukaemia, and reproductive disorders such as follicular and luteal cysts
CC and choriocarcinoma. They can also be used as contraceptive agents. DNA
CC encoding the peptides can be used in gene therapy. The measurement of
CC abnormal levels of N-terminal fragments of hGH, hGH-V, prolactin or hPL
CC can be used in assays for impairment of vascular development associated
CC with pre-eclampsia, intrauterine growth retardation, and placental
CC dysfunction
XX
SQ Sequence 134 AA;

Query Match 59.0%; Score 470; DB 2; Length 134;
Best Local Similarity 100.0%; Pred. No. 4.6e-24;
Matches 92; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              ||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
```

RESULT 5
ABG94861
ID ABG94861 standard; protein; 191 AA.
XX
AC ABG94861;
XX
DT 03-DEC-2002 (first entry)
XX
DE Human growth hormone mutant hPRL (111-129).
XX
KW Growth hormone; placental lactogen; prolactin; active domain; hGH;
KW structure-function relationship; segment-substituted polypeptide; mutant;
KW mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN US6428954-B1.
XX
PD 06-AUG-2002.
XX
PF 06-JUN-1995; 95US-00483039.
XX
PR 28-OCT-1988; 88US-00264611.
PR 26-OCT-1989; 89US-00428066.
PR 27-APR-1992; 92US-00875204.
PR 13-OCT-1992; 92US-00960227.
PR 02-FEB-1994; 94US-00190723.
XX
PA (GETH) GENENTECH INC.
XX
PI Wells JA, Cunningham BC;
XX
DR WPI; 2002-696875/75.
XX
PT Identifying active domains within cloned polypeptides of known amino acid
PT sequence by substituting analog segments into the parent polypeptide is
PT useful to determine the relationship between structure and function.
XX
PS Example 1; Page; 86pp; English.
XX
CC The invention relates to identifying an unknown active domain in a region
CC of known amino acid sequence in a parent polypeptide e.g. human growth
CC hormone (hGH) which has been cloned and has a pre-identified biological

```
CC   activity, where the active domain interacts with a target when the parent
CC   polypeptide is in its native-folded form and the interaction is
CC   responsible for the biological activity comprising: (a) comparing the
CC   amino acid sequence or polypeptide structure in the region of known amino
CC   acid sequence of hGH with the amino acid sequence or polypeptide
CC   structure in a region of known amino acid sequence of an analogue
CC   polypeptide (e.g. prolactin, placental lactogen or porcine growth
CC   hormone) which has at least 15% homology with hGH alpha-carbon
CC   coordinates within about 2-3.5 angstroms of hGH alpha-carbon coordinates
CC   for about 60% of the analogue sequence, where any interaction of the
CC   analogue with the target is different from target interaction with hGH;
CC   (b) substituting DNA encoding an analogous polypeptide segment from the
CC   analogue into DNA encoding the full length hGH, and expressing a segment-
CC   substituted polypeptide; (c) contacting the segment-substituted
CC   polypeptide with the target to determine interaction; (d) repeating steps
CC   (b) and (c) with a second analogous polypeptide segment; and (e)
CC   comparing the difference between activity of the first and second segment
CC   -substituted polypeptides as an indication of the location of the unknown
CC   active domain in hGH. The method is useful for determining the
CC   relationship between structure and function of known polypeptide
CC   sequences. The present sequence is that of human growth hormone mutant
CC   substituted with residues from an hGH analogue (prolactin, placental
CC   lactogen or porcine growth hormone). Note: The present sequence is not
CC   shown in the specification but was created by the indexer using the
CC   mature hGH sequence and information contained in the specification
XX
SQ   Sequence 191 AA;

  Query Match             59.0%;  Score 470;  DB 5;  Length 191;
  Best Local Similarity   69.2%;  Pred. No. 6.1e-24;
  Matches  101;  Conservative    8;  Mismatches   19;  Indels   18;  Gaps    3;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS-------------H 108
              ||||||||||||||||||||||||||||||      | |  : |:
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVVDILEQLKR 119

Qy        109 LVEALYLVCGERGFFYTPKTRGIVEQ 134
              |:| | |:  :     :|:|  | :|
Db        120 LIEGLMLILSDG----SPRTGQIFKQ 141


RESULT 6
AAP90129
ID   AAP90129 standard; protein; 192 AA.
XX
AC   AAP90129;
XX
DT   24-OCT-2003  (revised)
DT   25-MAR-2003  (revised)
DT   06-FEB-1996  (revised)
DT   01-NOV-1989  (first entry)
XX
DE   Human growth hormone.
```

XX
KW Human growth hormone; fusion protein; recombinant vector.
XX
OS Homo sapiens; (Human).
XX
PN JP01144981-A.
XX
PD 07-JUN-1989.
XX
PF 02-DEC-1987; 87JP-00304937.
XX
PR 02-DEC-1987; 87JP-00304937.
XX
PA (WAKT) WAKUNAGA SEIYAKU KK.
XX
DR WPI; 1989-209284/29.
DR N-PSDB; AAN90269.
XX
PT Recombinant vector contg. fused protein aminoacid coding - composed of
PT growth hormone or its polypeptide deriv. and foreign protein.
XX
PS Disclosure; Fig 1; 19pp; Japanese.
XX
CC The invention consists of a vector contg. a fusion protein which is
CC formed by ligating, downstream of a promoter, hGH or a deriv. (pref.
CC formed by subtstn. of Met-14 with Leu) and a foreign protein. Stability
CC of the vector in the host is greatly increased so the protein yield is
CC higher. (Updated on 25-MAR-2003 to correct PA field.) (Updated on 24-OCT-
CC 2003 to standardise OS field)
XX
SQ Sequence 192 AA;

  Query Match   58.5%; Score 466; DB 1; Length 192;
  Best Local Similarity   70.5%; Pred. No. 1.1e-23;
  Matches 103; Conservative   7; Mismatches   20; Indels   16; Gaps   4;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142
```

RESULT 7
AAW92264
ID AAW92264 standard; protein; 192 AA.
XX
AC AAW92264;
XX
DT 08-JUN-1999 (first entry)
XX

DE Human anti-angiogenic peptide hGH Met-1Phe191.
XX
KW Human; anti-angiogenic; prolactin; placental lactogen; hPL; angiogenesis;
KW growth hormone; hGH; hGH-V; capillary endothelial cell proliferation;
KW placental vascularisation; pregnancy; treatment; angiogenic disease;
KW tumour; inhibitor; malignant; angiofibroma; arteriovenous malformation;
KW arthritis; atherosclerotic plaques; corneal graft neovascularisation;
KW wound healing; proliferative retinopathy; macular degeneration; trachoma;
KW granulation; glaucoma; ocular; uveitis; fracture; Osler-Weber syndrome;
KW psoriasis; fibroplasia; scleroderma; Kaposi's sarcoma; vascular adhesion;
KW ulcer; leukaemia; reproductive disorder; contraceptive agent;
KW gene therapy; pre-eclampsia; intrauterine growth retardation;
KW placental dysfunction.
XX
OS Homo sapiens.
XX
PN WO9851323-A1.
XX
PD 19-NOV-1998.
XX
PF 12-MAY-1998; 98WO-US009691.
XX
PR 13-MAY-1997; 97US-0046394P.
XX
PA (REGC) UNIV CALIFORNIA.
XX
PI Weiner RI, Martial JA, Struman I, Taylor R;
XX
DR WPI; 1999-045192/04.
DR N-PSDB; AAX01706.
XX
PT New anti-angiogenic peptides - comprise N-terminal fragments of human
PT placental lactogen, human growth hormone, growth hormone variant or human
PT prolactin.
XX
PS Example 3; Page 49; 87pp; English.
XX
CC This invention describes novel human anti-angiogenic peptides derived
CC from 10 to 150 consecutive amino acids selected from the N-terminal end
CC of human placental lactogen (hPL), human growth hormone (hGH), growth
CC hormone variant (hGH-V), or human prolactin. Such peptides (i) inhibit
CC capillary endothelial cell proliferation and organisation (ii) inhibit
CC angiogenesis in chick chorioallantoic membrane and (iii) binds to at
CC least one specific receptor which does not bind an intact full length
CC hGH, hPL, prolactin or hGH-V. The invention also describes a method for
CC diagnosing a probable abnormality of placental vascularisation during
CC pregnancy. The peptides can be used for treating an angiogenic disease in
CC a subject, for inhibiting tumour formation or growth in a patient or for
CC modulating vascularisation of a patient's placenta. In particular, the
CC peptides can be used for preventing or treating e.g. malignant tumours,
CC angiofibroma, arteriovenous malformation, arthritic such as rheumatoid
CC arthritis, atherosclerotic plaques, corneal graft neovascularisation,
CC delayed wound healing, proliferative retinopathy such as diabetic
CC retinopathy, macular degeneration, granulations such as those occurring
CC in haemophilic joints, inappropriate vascularisation in wound healing
CC such as hypertrophic scars or keloid scars, neovascular glaucoma, ocular
CC tumour, uveitis, non-union fractures, Osler-Weber syndrome, psoriasis,

CC pyogenic glaucoma, retrolental fibroplasia, scleroderma, solid tumours,
CC Kaposi's sarcoma, trachoma, vascular adhesions, chronic varicose ulcers,
CC leukaemia, and reproductive disorders such as follicular and luteal cysts
CC and choriocarcinoma. They can also be used as contraceptive agents. DNA
CC encoding the peptides can be used in gene therapy. The measurement of
CC abnormal levels of N-terminal fragments of hGH, hGH-V, prolactin or hPL
CC can be used in assays for impairment of vascular development associated
CC with pre-eclampsia, intrauterine growth retardation, and placental
CC dysfunction
XX
SQ Sequence 192 AA;

Query Match 58.5%; Score 466; DB 2; Length 192;
Best Local Similarity 70.5%; Pred. No. 1.1e-23;
Matches 103; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142
```

RESULT 8
AAP91041
ID AAP91041 standard; protein; 140 AA.
XX
AC AAP91041;
XX
DT 24-OCT-2003 (revised)
DT 14-DEC-1989 (first entry)
XX
DE Human growth hormone segment.
XX
KW Human growth hormone; fusion protein; thrombin; geriatric dementia;
KW nervous disorders; human nerve factor.
XX
OS Homo sapiens; (human).
XX
PN EP329175-A.
XX
PD 23-AUG-1989.
XX
PF 17-FEB-1989; 89EP-00102795.
XX
PR 19-FEB-1988; 88JP-00035042.
XX
PA (TOYJ) TOSOH CORP.
XX
PI Ohtsuka E;
XX

DR WPI; 1989-243092/34.
XX
PT New human nerve growth factor gene encoding fusion protein - having
PT cleavage site for thrombin, useful for treating geriatric dementia, etc.
XX
PS Disclosure; Page 21; 38pp; English.
XX
CC Human growth hormone segment, used at the N-terminal of a fusion protein,
CC which contains a thrombin recognition site, and human beta nerve growth
CC factor (beta-NGF) at the C-terminal. Beta-NGF can be used to control
CC geriatric dementia and other nervous disorders, and can be released from
CC the fusion protein by incubation with thrombin (see AAN90577-8, AAP91034,
CC AAP91299). (Updated on 24-OCT-2003 to standardise OS field)
XX
SQ Sequence 140 AA;

  Query Match   58.3%; Score 465; DB 1; Length 140;
  Best Local Similarity   98.9%; Pred. No. 1e-23;
  Matches   91; Conservative   0; Mismatches   1; Indels   0; Gaps   0;

Qy   1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db   1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy   61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db   61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92

RESULT 9
AAP91299
ID AAP91299 standard; protein; 261 AA.
XX
AC AAP91299;
XX
DT 24-OCT-2003 (revised)
DT 14-DEC-1989 (first entry)
XX
DE Human nerve growth factor and human growth hormone fusion protein.
XX
KW Human nerve growth factor; fusion protein; thrombin; geriatric dementia;
KW nervous disorders; human growth hormone.
XX
OS Homo sapiens; (human).
XX
FH Key   Location/Qualifiers
FT Region   1. .140
FT Region   141. .143
FT Region   144. .261
XX
PN EP329175-A.
XX
PD 23-AUG-1989.
XX
PF 17-FEB-1989;   89EP-00102795.
XX
PR 19-FEB-1988;   88JP-00035042.

XX
PA (TOYJ) TOSOH CORP.
XX
PI Ohtsuka E;
XX
DR WPI; 1989-243092/34.
XX
PT New human nerve growth factor gene encoding fusion protein - having
PT cleavage site for thrombin, useful for treating geriatric dementia, etc.
XX
PS Claim 36; Page 31-32; 38pp; English.
XX
CC Fusion protein consisting of human growth hormone at the N-terminal end
CC (1st region), a 3 amino acid sequence representing thrombin recognition
CC site, and human beta nerve growth factor (beta-NGF) at the C-terminal.
CC Beta-NGF can be used to control geriatric dementia and other nervous
CC disorders, and can be released from the fusion protein by incubation with
CC thrombin (see AAN90577-8, AAP91034, AAP91041). (Updated on 24-OCT-2003 to
CC standardise OS field)
XX
SQ Sequence 261 AA;

Query Match 58.3%; Score 465; DB 1; Length 261;
Best Local Similarity 98.9%; Pred. No. 1.7e-23;
Matches 91; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
```

RESULT 10
AAR11740
ID AAR11740 standard; protein; 262 AA.
XX
AC AAR11740;
XX
DT 25-MAR-2003 (revised)
DT 25-JUN-1991 (first entry)
XX
DE Human growth hormone/human nerve growth factor beta fusion protein.
XX
KW hGH; hNGF; nervous system diseases; dementia.
XX
OS Homo sapiens.
XX
PN JP03067598-A.
XX
PD 22-MAR-1991.
XX
PF 07-AUG-1989; 89JP-00202835.
XX
PR 07-AUG-1989; 89JP-00202835.

XX
PA (TOYJ) TOSOH CORP.
XX
DR WPI; 1991-128768/18.
DR N-PSDB; AAQ11578.
XX
PT Purificn. of human neuron growth factor beta-sub:unit-contg. protein - by
PT contacting with gel having cation exchange gp. in presence of urea.
XX
PS Disclosure; Fig 1; 7pp; Japanese.
XX
CC A recombinant human nerve growth factor beta subunit-contg. protein can
CC be produced as this fusion protein. It is purified by contacting a gel
CC having a cation exchange gp. with the fusion protein, in the presence of
CC urea. The purified protein is useful in a medicament for treating
CC disorders of the nervous system, eg dementia. (Updated on 25-MAR-2003 to
CC correct PF field.)
XX
SQ Sequence 262 AA;

Query Match 58.3%; Score 465; DB 2; Length 262;
Best Local Similarity 98.9%; Pred. No. 1.7e-23;
Matches 91; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
```

RESULT 11
AAR03255
ID AAR03255 standard; protein; 310 AA.
XX
AC AAR03255;
XX
DT 19-JUL-1990 (first entry)
XX
DE Fusion protein of B-cell stimulatory factor-2 and B-cell differentiation
DE factor.
XX
KW B-cell stimulatory factor-2; interleukin-6; B-cell differentiation;
KW interleukin-5; fusion protein.
XX
OS Homo sapiens.
XX
PN JP02013375-A.
XX
PD 17-JAN-1990.
XX
PF 01-JUL-1988; 88JP-00162556.
XX
PR 01-JUL-1988; 88JP-00162556.
XX

PA (TOYJ) TOSOH CORP.
XX
DR WPI; 1990-062207/09.
DR N-PSDB; AAQ02028.
XX
PT Prepn. of human B cell differentiation factor - from specified DNA
PT sequence segment, by recombinant DNA technique, gives protein of
PT specified amino acid sequence.
XX
PS Claim 31; Page 9; 17pp; Japanese.
XX
CC The protein is produced by fusing DNA encoding BDF (IL-) with DNA
CC encoding BSF-2 (IL-5)and ligating the product into an expression vector
CC See also AAR05311 and AAR05313
XX
SQ Sequence 310 AA;

Query Match 58.3%; Score 465; DB 2; Length 310;
Best Local Similarity 98.9%; Pred. No. 2e-23;
Matches 91; Conservative 0; Mismatches 1; Indels 0; Gaps 0;

```
Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
```

RESULT 12
ABG31862
ID ABG31862 standard; protein; 191 AA.
XX
AC ABG31862;
XX
DT 05-NOV-2002 (first entry)
XX
DE Mature human growth hormone (hGH), mutant #4.
XX
KW Human; growth hormone; hGH; Turner's syndrome; achondroplasia;
KW growth hormone deficiency in adults; GHDA; chronic renal insufficiency;
KW renal failure in children; acquired immune deficiency syndrome; AIDS;
KW AIDS wasting; cachexia; mutant; mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
FH Key Location/Qualifiers
FT Misc-difference 134
FT /note= "Wild type Arg substituted by Lys"
XX
PN WO200255532-A2.
XX
PD 18-JUL-2002.
XX
PF 10-JAN-2002; 2002WO-DK000017.

XX
PR 11-JAN-2001; 2001DK-00000042.
PR 11-JAN-2001; 2001US-0261411P.
XX
PA (MAXY-) MAXYGEN APS.
PA (MAXY-) MAXYGEN HOLDINGS LTD.
XX
PI Andersen KV, Drustrup J, Christiansen J;
XX
DR WPI; 2002-608345/65.
XX
PT New conjugates exhibiting growth hormone activity, useful for treating a
PT disease or for manufacturing a medicament for treating a disease, e.g.
PT Turner's syndrome, growth hormone deficiency, achondroplasia, AIDS
PT wasting or cachexia.
XX
PS Claim 10; Page; 74pp; English.
XX
CC The invention relates to new conjugates, which exhibit growth hormone
CC (GH) activity and comprise at least one non-polypeptide group covalently
CC attached to a GH polypeptide. The amino acid sequence of the conjugates
CC differs from that of wild type human GH in at least one introduced and at
CC least one removed amino acid residue comprising an attachment group for
CC the first non-polypeptide group. The conjugate or pharmaceutical
CC composition is useful for treating a disease or for manufacturing a
CC medicament for treating a disease, e.g. Turner's syndrome, GH deficiency
CC in adults (i.e. GHDA), achondroplasia, chronic renal insufficiency or
CC failure (including renal failure in children), acquired immune deficiency
CC syndrome (AIDS) wasting, cachexia in AIDS patients, or cachexia
CC associated with other diseases. The conjugates are useful for treating a
CC variety of disorders caused by growth hormone inadequacy. The present
CC sequence represents the amino acid sequence of a mutant human growth
CC hormone. Note: The present sequence is not shown in the specification but
CC is derived from the wild type human growth hormone sequence given in SEQ
CC ID No.2 (see ABG31857)
XX
SQ Sequence 191 AA;

Query Match 58.2%; Score 464; DB 5; Length 191;
Best Local Similarity 71.0%; Pred. No. 1.5e-23;
Matches 103; Conservative 6; Mismatches 20; Indels 16; Gaps 4;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||      | |  : |:           | |
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 119

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|||  | :|
Db        120 GIQTLMGRLEDG---SPKTGQIFKQ 141
```

RESULT 13
ABG94860

ID ABG94860 standard; protein; 191 AA.
XX
AC ABG94860;
XX
DT 03-DEC-2002 (first entry)
XX
DE Human growth hormone mutant hPL (109-112).
XX
KW Growth hormone; placental lactogen; prolactin; active domain; hGH;
KW structure-function relationship; segment-substituted polypeptide; mutant;
KW mutein.
XX
OS Homo sapiens.
OS Synthetic.
XX
PN US6428954-B1.
XX
PD 06-AUG-2002.
XX
PF 06-JUN-1995; 95US-00483039.
XX
PR 28-OCT-1988; 88US-00264611.
PR 26-OCT-1989; 89US-00428066.
PR 27-APR-1992; 92US-00875204.
PR 13-OCT-1992; 92US-00960227.
PR 02-FEB-1994; 94US-00190723.
XX
PA (GETH) GENENTECH INC.
XX
PI Wells JA, Cunningham BC;
XX
DR WPI; 2002-696875/75.
XX
PT Identifying active domains within cloned polypeptides of known amino acid
PT sequence by substituting analog segments into the parent polypeptide is
PT useful to determine the relationship between structure and function.
XX
PS Example 1; Page; 86pp; English.
XX
CC The invention relates to identifying an unknown active domain in a region
CC of known amino acid sequence in a parent polypeptide e.g. human growth
CC hormone (hGH) which has been cloned and has a pre-identified biological
CC activity, where the active domain interacts with a target when the parent
CC polypeptide is in its native-folded form and the interaction is
CC responsible for the biological activity comprising: (a) comparing the
CC amino acid sequence or polypeptide structure in the region of known amino
CC acid sequence of hGH with the amino acid sequence or polypeptide
CC structure in a region of known amino acid sequence of an analogue
CC polypeptide (e.g. prolactin, placental lactogen or porcine growth
CC hormone) which has at least 15% homology with hGH alpha-carbon
CC coordinates within about 2-3.5 angstroms of hGH alpha-carbon coordinates
CC for about 60% of the analogue sequence, where any interaction of the
CC analogue with the target is different from target interaction with hGH;
CC (b) substituting DNA encoding an analogous polypeptide segment from the
CC analogue into DNA encoding the full length hGH, and expressing a segment-
CC substituted polypeptide; (c) contacting the segment-substituted
CC polypeptide with the target to determine interaction; (d) repeating steps

```
CC   (b) and (c) with a second analogous polypeptide segment; and (e)
CC   comparing the difference between activity of the first and second segment
CC   -substituted polypeptides as an indication of the location of the unknown
CC   active domain in hGH. The method is useful for determining the
CC   relationship between structure and function of known polypeptide
CC   sequences. The present sequence is that of human growth hormone mutant
CC   substituted with residues from an hGH analogue (prolactin, placental
CC   lactogen or porcine growth hormone). Note: The present sequence is not
CC   shown in the specification but was created by the indexer using the
CC   mature hGH sequence and information contained in the specification
XX
SQ   Sequence 191 AA;

  Query Match             58.1%;  Score 463;  DB 5;  Length 191;
  Best Local Similarity   71.0%;  Pred. No. 1.8e-23;
  Matches  103;  Conservative    8;  Mismatches   18;  Indels   16;  Gaps    5;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS------HLV----E 111
              ||||||||||||||||||||||||||||      | |  : |:      ||:    |
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSDDYHLLKDLEE 119

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
               :  : |  | |   :|:|  | :|
Db        120 GIQTLMGRLEDG---SPRTGQIFKQ 141


RESULT 14
ABG94977
ID   ABG94977 standard; protein; 191 AA.
XX
AC   ABG94977;
XX
DT   03-DEC-2002  (first entry)
XX
DE   Human growth hormone mutant Y103A.
XX
KW   Growth hormone; placental lactogen; prolactin; active domain; hGH;
KW   structure-function relationship; segment-substituted polypeptide; mutant;
KW   mutein.
XX
OS   Homo sapiens.
OS   Synthetic.
XX
PN   US6428954-B1.
XX
PD   06-AUG-2002.
XX
PF   06-JUN-1995;   95US-00483039.
XX
PR   28-OCT-1988;   88US-00264611.
PR   26-OCT-1989;   89US-00428066.
PR   27-APR-1992;   92US-00875204.
PR   13-OCT-1992;   92US-00960227.
```

PR 02-FEB-1994; 94US-00190723.
XX
PA (GETH) GENENTECH INC.
XX
PI Wells JA, Cunningham BC;
XX
DR WPI; 2002-696875/75.
XX
PT Identifying active domains within cloned polypeptides of known amino acid
PT sequence by substituting analog segments into the parent polypeptide is
PT useful to determine the relationship between structure and function.
XX
PS Example 16; Page; 86pp; English.
XX
CC The invention relates to identifying an unknown active domain in a region
CC of known amino acid sequence in a parent polypeptide e.g. human growth
CC hormone (hGH) which has been cloned and has a pre-identified biological
CC activity, where the active domain interacts with a target when the parent
CC polypeptide is in its native-folded form and the interaction is
CC responsible for the biological activity comprising: (a) comparing the
CC amino acid sequence or polypeptide structure in the region of known amino
CC acid sequence of hGH with the amino acid sequence or polypeptide
CC structure in a region of known amino acid sequence of an analogue
CC polypeptide (e.g. prolactin, placental lactogen or porcine growth
CC hormone) which has at least 15% homology with hGH alpha-carbon
CC coordinates within about 2-3.5 angstroms of hGH alpha-carbon coordinates
CC for about 60% of the analogue sequence, where any interaction of the
CC analogue with the target is different from target interaction with hGH;
CC (b) substituting DNA encoding an analogous polypeptide segment from the
CC analogue into DNA encoding the full length hGH, and expressing a segment-
CC substituted polypeptide; (c) contacting the segment-substituted
CC polypeptide with the target to determine interaction; (d) repeating steps
CC (b) and (c) with a second analogous polypeptide segment; and (e)
CC comparing the difference between activity of the first and second segment
CC -substituted polypeptides as an indication of the location of the unknown
CC active domain in hGH. The method is useful for determining the
CC relationship between structure and function of known polypeptide
CC sequences. The present sequence is that of human growth hormone mutant
CC substituted at functionally important residues and used in the method of
CC the invention. Note: The present sequence is not shown in the
CC specification but was created by the indexer using the mature hGH
CC sequence and information contained in the specification
XX
SQ Sequence 191 AA;

Query Match 58.1%; Score 463; DB 5; Length 191;
Best Local Similarity 70.3%; Pred. No. 1.8e-23;
Matches 102; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||      | |  : |:           | |
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVAGASDSNVYDLLKDLEE 119
```

```
Qy         112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db         120 GIQTLMGRLEDG---SPRTGQIFKQ 141


RESULT 15
AAR05313
ID   AAR05313 standard; protein; 144 AA.
XX
AC   AAR05313;
XX
DT   19-JUL-1990  (first entry)
XX
DE   Segment of B-cell stimulatory factor-2 (IL-5).
XX
KW   B-cell stimulatory factor-2; interleukin-5.
XX
OS   Homo sapiens.
XX
PN   JP02013375-A.
XX
PD   17-JAN-1990.
XX
PF   01-JUL-1988;   88JP-00162556.
XX
PR   01-JUL-1988;   88JP-00162556.
XX
PA   (TOYJ ) TOSOH CORP.
XX
DR   WPI; 1990-062207/09.
DR   N-PSDB; AAQ02028.
XX
PT   Prepn. of human B cell differentiation factor - from specified DNA
PT   sequence segment, by recombinant DNA technique, gives protein of
PT   specified amino acid sequence.
XX
PS   Disclosure; Page 9; 17pp; Japanese.
XX
CC   The sequence encoding this protein can be fused with DNA encoding B-cell
CC   differentiation factor (IL-6) and ligated into an expression vector for
CC   prodn. of a fusion protein. See also AAR05311
XX
SQ   Sequence 144 AA;

  Query Match             58.0%;  Score 462;  DB 2;  Length 144;
  Best Local Similarity   97.8%;  Pred. No. 1.7e-23;
  Matches   90;  Conservative    1;  Mismatches    1;  Indels    0;  Gaps    0;

Qy           1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
               ||||||||||||||||||||||||||||||||||||||||||||:|||||| ||||||
Db           1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLENPQTSLCFSESIP 60

Qy          61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
               ||||||||||||||||||||||||||||||||
Db          61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
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Job time : 79.3582 secs

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 15, 2004, 16:30:45 ; Search time 22.6679 Seconds
(without alignments)
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Perfect score: 797
Sequence: 1 MFPTIPLSRLFDNAMLRAHR.....IVEQCCTSICSLYQLENYCN 150

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 389414 seqs, 51625971 residues

Total number of hits satisfying chosen parameters: 389414

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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6: /cgn2_6/ptodata/2/iaa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	466	58.5	192	1	US-08-093-383-1	Sequence 1, Appli
2	461	57.8	191	4	US-09-284-878-5	Sequence 5, Appli
3	461	57.8	191	4	US-09-462-941-1	Sequence 1, Appli
4	461	57.8	194	2	US-08-383-621-4	Sequence 4, Appli
5	461	57.8	194	3	US-08-459-906-4	Sequence 4, Appli
6	461	57.8	217	3	US-08-589-028-10	Sequence 10, Appl
7	461	57.8	217	3	US-08-784-582-10	Sequence 10, Appl
8	461	57.8	217	3	US-08-785-271-10	Sequence 10, Appl
9	461	57.8	217	3	US-08-759-628-11	Sequence 11, Appl
10	461	57.8	217	4	US-09-284-878-1	Sequence 1, Appli
11	461	57.8	217	4	US-09-511-024A-1	Sequence 1, Appli

12	461	57.8	241	4	US-09-424-620B-25	Sequence 25, Appl
13	461	57.8	245	4	US-09-280-030-66	Sequence 66, Appl
14	461	57.8	274	3	US-08-784-582-71	Sequence 71, Appl
15	461	57.8	360	3	US-08-784-582-73	Sequence 73, Appl
16	460	57.7	191	4	US-09-554-451-1	Sequence 1, Appli
17	455	57.1	191	4	US-09-465-461-1	Sequence 1, Appli
18	455	57.1	191	4	US-09-554-451-3	Sequence 3, Appli
19	455	57.1	217	1	US-08-187-756C-4	Sequence 4, Appli
20	455	57.1	217	1	US-08-469-486-51	Sequence 51, Appl
21	455	57.1	217	2	US-08-469-658-51	Sequence 51, Appl
22	455	57.1	217	2	US-08-710-324A-4	Sequence 4, Appli
23	455	57.1	217	4	US-09-411-657-4	Sequence 4, Appli
24	454	57.0	400	4	US-09-420-819-37	Sequence 37, Appl
25	454	57.0	401	4	US-09-420-819-36	Sequence 36, Appl
26	448	56.2	191	3	US-08-800-215C-18	Sequence 18, Appl
27	448	56.2	191	4	US-09-511-024A-4	Sequence 4, Appli
28	446	56.0	191	3	US-08-800-215C-16	Sequence 16, Appl
29	446	56.0	191	3	US-08-800-215C-20	Sequence 20, Appl
30	442.5	55.5	191	4	US-09-511-024A-9	Sequence 9, Appli
31	442	55.5	191	4	US-09-511-024A-5	Sequence 5, Appli
32	435	54.6	191	4	US-09-511-024A-3	Sequence 3, Appli
33	435	54.6	191	4	US-09-511-024A-6	Sequence 6, Appli
34	414	51.9	191	4	US-09-511-024A-7	Sequence 7, Appli
35	410.5	51.5	190	4	US-09-511-024A-13	Sequence 13, Appl
36	407	51.1	190	4	US-09-511-024A-10	Sequence 10, Appl
37	407	51.1	191	4	US-09-511-024A-8	Sequence 8, Appli
38	406.5	51.0	190	4	US-09-511-024A-12	Sequence 12, Appl
39	403.5	50.6	190	4	US-09-511-024A-11	Sequence 11, Appl
40	365.5	45.9	176	3	US-08-791-728-1	Sequence 1, Appli
41	365.5	45.9	176	4	US-08-990-774-1	Sequence 1, Appli
42	359.5	45.1	176	3	US-08-791-728-2	Sequence 2, Appli
43	359.5	45.1	176	4	US-08-990-774-2	Sequence 2, Appli
44	343	43.0	168	6	5424199-3	Patent No. 5424199
45	334.5	42.0	198	1	US-08-187-756C-5	Sequence 5, Appli

ALIGNMENTS

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RESULT 1
US-08-093-383-1
; Sequence 1, Application US/08093383
; Patent No. 5489529
;  GENERAL INFORMATION:
;    APPLICANT:  DeBoer, Herman A.
;    APPLICANT:  Heyneker, Herbert L.
;    APPLICANT:  Seeburg, Peter H.
;    TITLE OF INVENTION:  DNA for Expression of Bovine Growth Hormone
;    NUMBER OF SEQUENCES:  30
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Genentech, Inc.
;      STREET:  460 Point San Bruno Blvd
;      CITY:  South San Francisco
;      STATE:  California
;      COUNTRY:  USA
;      ZIP:  94080
;    COMPUTER READABLE FORM:
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;       MEDIUM TYPE:  5.25 inch, 360 Kb floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  patin (Genentech)
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/093,383
;       FILING DATE:  14-JUL-1993
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/619827
;       FILING DATE:  28-NOV-1990
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  07/198824
;       FILING DATE:  05-APR-1988
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  06/632361
;       FILING DATE:  19-JUL-1984
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  06/303687
;       FILING DATE:  18-SEP-1981
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Johnston, Sean A.
;       REGISTRATION NUMBER:  P35,910
;       REFERENCE/DOCKET NUMBER:  46C4
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  415/225-3562
;       TELEFAX:  415/952-9881
;       TELEX:  910/371-7168
;   INFORMATION FOR SEQ ID NO:  1:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  192 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
US-08-093-383-1

  Query Match             58.5%;  Score 466;  DB 1;  Length 192;
  Best Local Similarity   70.5%;  Pred. No. 1.3e-42;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              ||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 2
US-09-284-878-5
; Sequence 5, Application US/09284878
; Patent No. 6342375
; GENERAL INFORMATION:
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;  APPLICANT:  Olazaran, Martha Guerrero
;  APPLICANT:  Saldana, Hugo Barrera
;  APPLICANT:  Salvado, Jose Maria Viader
;  TITLE OF INVENTION:  Genetically Modified Methylotrophic P. pastoris Yeast
for the
;  TITLE OF INVENTION:  Production and Secretion of the Human Growth Hormone
;  FILE REFERENCE:  1829.0010000
;  CURRENT APPLICATION NUMBER: US/09/284,878
;  CURRENT FILING DATE:  1999-07-21
;  PRIOR APPLICATION NUMBER:  PCT/MX97/00033
;  PRIOR FILING DATE:  1997-10-24
;  NUMBER OF SEQ ID NOS:  9
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 5
;   LENGTH: 191
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-284-878-5

  Query Match             57.8%;  Score 461;  DB 4;  Length 191;
  Best Local Similarity   70.3%;  Pred. No. 4.6e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              ||||||||||||||||||||||||||||      | |  : |:           | |
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 119

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        120 GIQTLMGRLEDG---SPRTGQIFKQ 141


RESULT 3
US-09-462-941-1
; Sequence 1, Application US/09462941
; Patent No. 6608183
; GENERAL INFORMATION:
;  APPLICANT: Cox III, George N
;  APPLICANT:  Bolder Biotechnology, Inc.
;  TITLE OF INVENTION: Derivatives of Growth Hormone and Related Proteins
;  FILE REFERENCE: 4152-1-PUS
;  CURRENT APPLICATION NUMBER: US/09/462,941
;  CURRENT FILING DATE:  2000-01-14
;  PRIOR APPLICATION NUMBER: 60/052,516
;  PRIOR FILING DATE: 1997-07-14
;  NUMBER OF SEQ ID NOS: 41
;  SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 1
;   LENGTH: 191
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-462-941-1
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  Query Match             57.8%;  Score 461;  DB 4;  Length 191;
  Best Local Similarity   70.3%;  Pred. No. 4.6e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          1 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 60

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||      | |  : |:          | |
Db         61 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 119

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        120 GIQTLMGRLEDG---SPRTGQIFKQ 141


RESULT 4
US-08-383-621-4
; Sequence 4, Application US/08383621
; Patent No. 5951972
;  GENERAL INFORMATION:
;    APPLICANT:  Daley, Michael J.
;    APPLICANT:  Buckwalter, Brian L.
;    APPLICANT:  Cady, Susan M.
;    APPLICANT:  Shieh, Hong-Ming
;    APPLICANT:  Bohlen, Peter
;    APPLICANT:  Seddon, Andrew P.
;    TITLE OF INVENTION:  Stabilization Of Somatotropins And Other
;    TITLE OF INVENTION:  Proteins By Modification Of Cysteine Residues
;    NUMBER OF SEQUENCES:  11
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Dr. Estelle J. Tsevdos
;      STREET:  1937 West Main Street, P.O. Box 60
;      CITY:  Stamford
;      STATE:  Connecticut
;      COUNTRY:  U.S.A.
;      ZIP:  06904-0060
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/383,621
;      FILING DATE:  06-FEB-1995
;      CLASSIFICATION:  514
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 07/766,142
;      FILING DATE:  25-SEP-1991
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Tsevdos, Estelle J.
;      REGISTRATION NUMBER:  31,145
;      REFERENCE/DOCKET NUMBER:  31,278-01
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  203-321-2756
;      TELEFAX:  203-321-2971
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;      TELEX:  203-710-474-4059
;  INFORMATION FOR SEQ ID NO:  4:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  194 amino acids
;      TYPE:  amino acid
;      TOPOLOGY:  linear
;    MOLECULE TYPE:  protein
US-08-383-621-4

  Query Match             57.8%;  Score 461;  DB 2;  Length 194;
  Best Local Similarity   70.3%;  Pred. No. 4.7e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          4 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 63

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||      | |  : |:           | |
Db         64 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 122

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
               :  : |  | |   :|:|  | :|
Db        123 GIQTLMGRLEDG---SPRTGQIFKQ 144


RESULT 5
US-08-459-906-4
; Sequence 4, Application US/08459906
; Patent No. 6010999
;  GENERAL INFORMATION:
;    APPLICANT:  Daley, Michael J.
;    APPLICANT:  Buckwalter, Brian L.
;    APPLICANT:  Cady, Susan M.
;    APPLICANT:  Shieh, Hong-Ming
;    APPLICANT:  Bohlen, Peter
;    APPLICANT:  Seddon, Andrew P.
;    TITLE OF INVENTION:  Stabilization of Somatotropins and Other
;    TITLE OF INVENTION:  Proteins by Modification of Cysteine Residues
;    NUMBER OF SEQUENCES:  11
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  American Cyanamid Company
;      STREET:  One Cyanamid Plaza
;      CITY:  Wayne
;      STATE:  New Jersey
;      COUNTRY:  U.S.A.
;      ZIP:  07470-8426
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.25
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/459,906
;      FILING DATE:  02-JUN-1995
;      CLASSIFICATION:  514
;    ATTORNEY/AGENT INFORMATION:
```

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;       NAME:  Webster, Darryl L.
;       REGISTRATION NUMBER:  34,276
;       REFERENCE/DOCKET NUMBER:  31,278-03
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  201-831-3247
;       TELEFAX:  201-831-3305
;   INFORMATION FOR SEQ ID NO:  4:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  194 amino acids
;       TYPE:  amino acid
;       TOPOLOGY:  linear
;     MOLECULE TYPE:  protein
US-08-459-906-4

  Query Match             57.8%;  Score 461;  DB 3;  Length 194;
  Best Local Similarity   70.3%;  Pred. No. 4.7e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          4 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 63

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||     | |  : |:           | |
Db         64 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 122

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        123 GIQTLMGRLEDG---SPRTGQIFKQ 144


RESULT 6
US-08-589-028-10
; Sequence 10, Application US/08589028
; Patent No. 6087129
;  GENERAL INFORMATION:
;    APPLICANT:  Newgard, Christopher B.
;    APPLICANT:  Halban, Philippe
;    APPLICANT:  No. 6087129mington, Karl D.
;    APPLICANT:  Clark, Samuel A.
;    APPLICANT:  Thigpen, Anice E.
;    APPLICANT:  Quaade, Christian
;    APPLICANT:  Kruse, Fred
;    TITLE OF INVENTION:  Recombinant Expression of Proteins From
;    TITLE OF INVENTION:  Secretory Cell Lines
;    NUMBER OF SEQUENCES:  50
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Arnold, White & Durkee
;      STREET:  P. O. Box 4433
;      CITY:  Houston
;      STATE:  TX
;      COUNTRY:  USA
;      ZIP:  77210-4433
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
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;       SOFTWARE:  PatentIn Release #1.0, Version #1.30
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/589,028
;       FILING DATE:  Concurrently Herewith
;       CLASSIFICATION:  435
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Highlander, Steven L.
;       REGISTRATION NUMBER:  47,642
;       REFERENCE/DOCKET NUMBER:  UTSD:426\HYL
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  (512) 418-3000
;       TELEFAX:  (512) 474-7577
;   INFORMATION FOR SEQ ID NO:  10:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  217 amino acids
;       TYPE:  amino acid
;       STRANDEDNESS:
;       TOPOLOGY:  linear
US-08-589-028-10

  Query Match             57.8%;  Score 461;  DB 3;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              |||||||||||||||||||||||||||||      | |  : |:           | |
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 7
US-08-784-582-10
; Sequence 10, Application US/08784582
; Patent No. 6110707
;  GENERAL INFORMATION:
;    APPLICANT:  Newgard, Christopher B.
;    APPLICANT:  Halban, Philippe A.
;    APPLICANT:  No. 6110707mington, Karl D.
;    APPLICANT:  Clark, Samuel A.
;    APPLICANT:  Thigpen, Anice E.
;    APPLICANT:  Quaade, Christian
;    APPLICANT:  Kruse, Fred
;    APPLICANT:  McGarry, Dennis
;    TITLE OF INVENTION:  RECOMBINANT EXPRESSION OF PROTEINS FROM
;    TITLE OF INVENTION:  SECRETORY CELL LINES
;    NUMBER OF SEQUENCES:  79
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Arnold, White & Durkee
;      STREET:  P.O. Box 4433
;      CITY:  Houston
```

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;       STATE:  Texas
;       COUNTRY:  USA
;       ZIP:  77210
;     COMPUTER READABLE FORM:
;       MEDIUM TYPE:  Floppy disk
;       COMPUTER:  IBM PC compatible
;       OPERATING SYSTEM:  PC-DOS/MS-DOS
;       SOFTWARE:  PatentIn Release #1.0, Version #1.30
;     CURRENT APPLICATION DATA:
;       APPLICATION NUMBER:  US/08/784,582
;       FILING DATE:  Concurrently Herewith
;       CLASSIFICATION:  435
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 60/028,427
;       FILING DATE:  15-OCT-1996
;     PRIOR APPLICATION DATA:
;       APPLICATION NUMBER:  US 08/589,028
;       FILING DATE:  19-JAN-1996
;     ATTORNEY/AGENT INFORMATION:
;       NAME:  Highlander, Steven L.
;       REGISTRATION NUMBER:  37,642
;       REFERENCE/DOCKET NUMBER:  UTSD:514
;     TELECOMMUNICATION INFORMATION:
;       TELEPHONE:  512/418-3000
;       TELEFAX:  512/474-7577
;   INFORMATION FOR SEQ ID NO:  10:
;     SEQUENCE CHARACTERISTICS:
;       LENGTH:  217 amino acids
;       TYPE:  amino acid
;       STRANDEDNESS:
;       TOPOLOGY:  linear
US-08-784-582-10

  Query Match             57.8%;  Score 461;  DB 3;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              ||||||||||||||||||||||||||||||      | |  : |:           | |
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 8
US-08-785-271-10
; Sequence 10, Application US/08785271
; Patent No. 6194176
;  GENERAL INFORMATION:
;    APPLICANT:  Newgard, Christopher B.
;    APPLICANT:  Halban, Philippe A.
```

```
;    APPLICANT:  No. 6194176mington, Karl D.
;    APPLICANT:  Clark, Samuel A.
;    APPLICANT:  Thigpen, Anice E.
;    APPLICANT:  Quaade, Christian
;    APPLICANT:  Kruse, Fred
;    TITLE OF INVENTION:  RECOMBINANT EXPRESSION OF PROTEINS FROM
;    TITLE OF INVENTION:  SECRETORY CELL LINES
;    NUMBER OF SEQUENCES:  56
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Arnold, White & Durkee
;      STREET:  P.O. Box 4433
;      CITY:  Houston
;      STATE:  Texas
;      COUNTRY:  USA
;      ZIP:  77210
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/785,271
;      FILING DATE:  Concurrently Herewith
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/589,028
;      FILING DATE:  19-JAN-1996
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Highlander, Steven L.
;      REGISTRATION NUMBER:  37,642
;      REFERENCE/DOCKET NUMBER:  UTSD:513
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  512/418-3000
;      TELEFAX:  512/474-7577
;  INFORMATION FOR SEQ ID NO:  10:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  217 amino acids
;      TYPE:  amino acid
;      STRANDEDNESS:
;      TOPOLOGY:  linear
US-08-785-271-10

  Query Match             57.8%;  Score 461;  DB 3;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              ||||||||||||||||||||||||||||      | |  : |:           | |
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167
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RESULT 9
US-08-759-628-11
; Sequence 11, Application US/08759628
; Patent No. 6225446
; GENERAL INFORMATION:
;   APPLICANT: Altmann, Scott W.
;   APPLICANT: Rock, Fernando L.
;   APPLICANT: Bazan, J. Fernando
;   APPLICANT: Kastelein, Robert A.
;   TITLE OF INVENTION: MUTATIONAL VARIANTS OF MAMMLIAN PROTEINS
;   NUMBER OF SEQUENCES: 11
;   CORRESPONDENCE ADDRESS:
;   ADDRESSEE: DNAX Research Institute
;   STREET: 901 California Avenue
;   CITY: Palo Alto
;   STATE: California
;   COUNTRY: USA
;   ZIP: 94304-1104
;   COMPUTER READABLE FORM:
;   MEDIUM TYPE: Floppy disk
;   COMPUTER: IBM PC compatible
;   OPERATING SYSTEM: PC-DOS/MS-DOS
;   SOFTWARE: PatentIn Release #1.0, Version #1.30
;   CURRENT APPLICATION DATA:
;   APPLICATION NUMBER: US/08/759,628
;   FILING DATE: 05-DEC-1996
;   CLASSIFICATION: 435
;   PRIOR APPLICATION DATA:
;   APPLICATION NUMBER: US 60/008,574
;   FILING DATE: 06-DEC-1995
;   ATTORNEY/AGENT INFORMATION:
;   NAME: Ching, Edwin P.
;   REGISTRATION NUMBER: 34,090
;   REFERENCE/DOCKET NUMBER: DX0552Q
;   TELECOMMUNICATION INFORMATION:
;   TELEPHONE: 415-852-9196
;   TELEFAX: 415-496-1200
; INFORMATION FOR SEQ ID NO: 11:
;   SEQUENCE CHARACTERISTICS:
;   LENGTH: 217 amino acids
;   TYPE: amino acid
;   STRANDEDNESS: single
;   TOPOLOGY: linear
;   MOLECULE TYPE: protein
;   FEATURE:
;   NAME/KEY: Peptide
;   LOCATION: 32..53
;   FEATURE:
;   NAME/KEY: Peptide
;   LOCATION: 94..115
;   FEATURE:
;   NAME/KEY: Peptide
;   LOCATION: 133..153
;   FEATURE:
;   NAME/KEY: Peptide

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;       LOCATION:  192..210
;       OTHER INFORMATION:  /note= "The peptides above are
;       OTHER INFORMATION:  depicted in Figure 1"
US-08-759-628-11

  Query Match             57.8%;  Score 461;  DB 3;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

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Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

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Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
               :  : |  | |   :|:|  | :|
Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 10
US-09-284-878-1
; Sequence 1, Application US/09284878
; Patent No. 6342375
; GENERAL INFORMATION:
;  APPLICANT:  Olazaran, Martha Guerrero
;  APPLICANT:  Saldana, Hugo Barrera
;  APPLICANT:  Salvado, Jose Maria Viader
;  TITLE OF INVENTION:  Genetically Modified Methylotrophic P. pastoris Yeast
for the
;  TITLE OF INVENTION:  Production and Secretion of the Human Growth Hormone
;  FILE REFERENCE:  1829.0010000
;  CURRENT APPLICATION NUMBER: US/09/284,878
;  CURRENT FILING DATE:  1999-07-21
;  PRIOR APPLICATION NUMBER:  PCT/MX97/00033
;  PRIOR FILING DATE:  1997-10-24
;  NUMBER OF SEQ ID NOS:  9
;  SOFTWARE:  PatentIn Ver. 2.1
; SEQ ID NO 1
;   LENGTH: 217
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-284-878-1

  Query Match             57.8%;  Score 461;  DB 4;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              ||||||||||||||||||||||||||||||      | |  : |:           | |
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145
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Qy         112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db         146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 11
US-09-511-024A-1
; Sequence 1, Application US/09511024A
; Patent No. 6634554
; GENERAL INFORMATION:
;  APPLICANT: Filikov, Anton
;  APPLICANT:  Dahiyat, Bassil I.
;  TITLE OF INVENTION: NOVEL NUCLEIC ACIDS AND PROTEINS WITH GROWTH HORMONE
ACTIVITY
;  FILE REFERENCE: A-67477-1/RFT/RMS/RMK
;  CURRENT APPLICATION NUMBER: US/09/511,024A
;  CURRENT FILING DATE:  2002-05-06
;  PRIOR APPLICATION NUMBER: US 60/133,784
;  PRIOR FILING DATE: 1999-05-12
;  NUMBER OF SEQ ID NOS: 13
;  SOFTWARE: PatentIn version 3.1
; SEQ ID NO 1
;   LENGTH: 217
;   TYPE: PRT
;   ORGANISM: Homo sapiens
;   FEATURE:
;   NAME/KEY: SIGNAL
;   LOCATION: (1)..(26)
;   OTHER INFORMATION:
;   FEATURE:
;   NAME/KEY: mat_peptide
;   LOCATION: (27)..()
;   OTHER INFORMATION:
US-09-511-024A-1

  Query Match             57.8%;  Score 461;  DB 4;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 5.4e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy           2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
               ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db          27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
               ||||||||||||||||||||||||||||||      | |  : |:           | |
Db          87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy         112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db         146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 12
US-09-424-620B-25
; Sequence 25, Application US/09424620B
; Patent No. 6391585
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;   GENERAL INFORMATION:
;        APPLICANT: HANIL SYNTHETIC FIBER CO., LTD.
;                   JANG. Ki-Ryong
;                   MOON, Jae-Woong
;                   BAE, Cheon-Soon
;                   YANG, Doo-Suk
;                   LEE, Jee-Won
;                   SEONG, Baik-Lin
;        TITLE OF INVENTION: Process for preparing recombinant proteins using
highly
;                            efficient expression vector from Sacharomyces
cerevisiae
;        NUMBER OF SEQUENCES: 25
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: BACHMAN & LAPOINTE, P.C.
;             STREET: Suite 1201, 900 Chapel Street
;             CITY: New Haven
;             STATE: Connecticut
;             COUNTRY: U.S.A.
;             ZIP: 06510-2802
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Diskette, 3.5 inch, 1.44 Mb storage
;             COMPUTER: IBM
;             OPERATING SYSTEM: WINDOWS 95/98
;             SOFTWARE: MS WORD
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/09/424,620B
;             FILING DATE: 24-No. 6391585-1999
;   INFORMATION FOR SEQ ID NO: 25:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 241 amino acids
;             TYPE: amino acid
;             TOPOLOGY: linear
;        MOLECULE TYPE: PROTEIN
;        SEQUENCE DESCRIPTION: SEQ ID NO: 25:
US-09-424-620B-25

  Query Match             57.8%;  Score 461;  DB 4;  Length 241;
  Best Local Similarity   70.3%;  Pred. No. 6.2e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         51 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 110

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
              ||||||||||||||||||||||||||||||      | |  : |:           | |
Db        111 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 169

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                   :  : |  | |   :|:|  | :|
Db        170 GIQTLMGRLEDG---SPRTGQIFKQ 191


RESULT 13
US-09-280-030-66
; Sequence 66, Application US/09280030A
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; Patent No. 6506595
; GENERAL INFORMATION:
; APPLICANT: Sato, Seiji
; APPLICANT: Higashikuni, Naohiko
; APPLICANT: Kudo, Toshiyuki
; APPLICANT: Kondo, Masaaki
; TITLE OF INVENTION: DNAS ENCODING NEW FUSION PROTEINS AND PROCESSES FOR
; TITLE OF INVENTION: PREPARING USEFUL POLYPEPTIDES THROUGH EXPRESSION OF THE
; TITLE OF INVENTION: DNAS
; FILE REFERENCE: 382.1026
; CURRENT APPLICATION NUMBER: US/09/280,030A
; CURRENT FILING DATE: 1999-03-26
; EARLIER APPLICATION NUMBER: JP10-87339/1998
; EARLIER FILING DATE: 1998-03-31
; NUMBER OF SEQ ID NOS: 66
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 66
; LENGTH: 245
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Description of Artificial Sequence: Designated is
; OTHER INFORMATION: an amino acid sequence of MWPsp-MWPmp20-TEV-G-GH
US-09-280-030-66

Query Match 57.8%; Score 461; DB 4; Length 245;
Best Local Similarity 70.3%; Pred. No. 6.4e-42;
Matches 102; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

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Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
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Db         55 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 114

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
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Db        115 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 173

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
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Db        174 GIQTLMGRLEDG---SPRTGQIFKQ 195
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RESULT 14
US-08-784-582-71
; Sequence 71, Application US/08784582
; Patent No. 6110707
; GENERAL INFORMATION:
; APPLICANT: Newgard, Christopher B.
; APPLICANT: Halban, Philippe A.
; APPLICANT: No. 6110707mington, Karl D.
; APPLICANT: Clark, Samuel A.
; APPLICANT: Thigpen, Anice E.
; APPLICANT: Quaade, Christian
; APPLICANT: Kruse, Fred
; APPLICANT: McGarry, Dennis
; TITLE OF INVENTION: RECOMBINANT EXPRESSION OF PROTEINS FROM
; TITLE OF INVENTION: SECRETORY CELL LINES

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;    NUMBER OF SEQUENCES:  79
;    CORRESPONDENCE ADDRESS:
;      ADDRESSEE:  Arnold, White & Durkee
;      STREET:  P.O. Box 4433
;      CITY:  Houston
;      STATE:  Texas
;      COUNTRY:  USA
;      ZIP:  77210
;    COMPUTER READABLE FORM:
;      MEDIUM TYPE:  Floppy disk
;      COMPUTER:  IBM PC compatible
;      OPERATING SYSTEM:  PC-DOS/MS-DOS
;      SOFTWARE:  PatentIn Release #1.0, Version #1.30
;    CURRENT APPLICATION DATA:
;      APPLICATION NUMBER:  US/08/784,582
;      FILING DATE:  Concurrently Herewith
;      CLASSIFICATION:  435
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 60/028,427
;      FILING DATE:  15-OCT-1996
;    PRIOR APPLICATION DATA:
;      APPLICATION NUMBER:  US 08/589,028
;      FILING DATE:  19-JAN-1996
;    ATTORNEY/AGENT INFORMATION:
;      NAME:  Highlander, Steven L.
;      REGISTRATION NUMBER:  37,642
;      REFERENCE/DOCKET NUMBER:  UTSD:514
;    TELECOMMUNICATION INFORMATION:
;      TELEPHONE:  512/418-3000
;      TELEFAX:  512/474-7577
;  INFORMATION FOR SEQ ID NO:  71:
;    SEQUENCE CHARACTERISTICS:
;      LENGTH:  274 amino acids
;      TYPE:  amino acid
;      STRANDEDNESS:
;      TOPOLOGY:  linear
US-08-784-582-71

  Query Match             57.8%;  Score 461;  DB 3;  Length 274;
  Best Local Similarity   70.3%;  Pred. No. 7.3e-42;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

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Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
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Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 15
US-08-784-582-73
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; Sequence 73, Application US/08784582
; Patent No. 6110707
; GENERAL INFORMATION:
; APPLICANT: Newgard, Christopher B.
; APPLICANT: Halban, Philippe A.
; APPLICANT: No. 6110707mington, Karl D.
; APPLICANT: Clark, Samuel A.
; APPLICANT: Thigpen, Anice E.
; APPLICANT: Quaade, Christian
; APPLICANT: Kruse, Fred
; APPLICANT: McGarry, Dennis
; TITLE OF INVENTION: RECOMBINANT EXPRESSION OF PROTEINS FROM
; TITLE OF INVENTION: SECRETORY CELL LINES
; NUMBER OF SEQUENCES: 79
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: Arnold, White & Durkee
; STREET: P.O. Box 4433
; CITY: Houston
; STATE: Texas
; COUNTRY: USA
; ZIP: 77210
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/784,582
; FILING DATE: Concurrently Herewith
; CLASSIFICATION: 435
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 60/028,427
; FILING DATE: 15-OCT-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/589,028
; FILING DATE: 19-JAN-1996
; ATTORNEY/AGENT INFORMATION:
; NAME: Highlander, Steven L.
; REGISTRATION NUMBER: 37,642
; REFERENCE/DOCKET NUMBER: UTSD:514
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 512/418-3000
; TELEFAX: 512/474-7577
; INFORMATION FOR SEQ ID NO: 73:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 360 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
US-08-784-582-73

Query Match 57.8%; Score 461; DB 3; Length 360;
Best Local Similarity 70.3%; Pred. No. 1e-41;
Matches 102; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

Qy 2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
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Db          87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy         112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
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Db         146 GIQTLMGRLEDG---SPRTGQIFKQ 167


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GenCore version 5.1.6

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Title: US-09-423-100-7
Perfect score: 797
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Total number of hits satisfying chosen parameters: 1285345

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Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
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14: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep:*
15: /cgn2_6/ptodata/1/pubpaa/US10C_PUBCOMB.pep:*
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17: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB.pep:*
18: /cgn2_6/ptodata/1/pubpaa/US60_PUBCOMB.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description

1	797	100.0	150	13	US-10-054-873-7	Sequence 7, Appli
2	555.5	69.7	107	13	US-10-054-873-6	Sequence 6, Appli
3	470	59.0	92	13	US-10-054-873-2	Sequence 2, Appli
4	470	59.0	134	10	US-09-819-094-24	Sequence 24, Appl
5	470	59.0	134	16	US-10-714-067-24	Sequence 24, Appl
6	466	58.5	188	12	US-10-621-693-18	Sequence 18, Appl
7	466	58.5	192	10	US-09-819-094-23	Sequence 23, Appl
8	466	58.5	192	12	US-10-621-693-8	Sequence 8, Appli
9	466	58.5	192	12	US-10-621-693-78	Sequence 78, Appl
10	466	58.5	192	12	US-10-621-693-86	Sequence 86, Appl
11	466	58.5	192	16	US-10-714-067-23	Sequence 23, Appl
12	466	58.5	193	12	US-10-621-693-42	Sequence 42, Appl
13	466	58.5	206	12	US-10-621-693-72	Sequence 72, Appl
14	466	58.5	391	12	US-10-621-693-51	Sequence 51, Appl
15	466	58.5	574	12	US-10-621-693-32	Sequence 32, Appl
16	466	58.5	576	12	US-10-621-693-39	Sequence 39, Appl
17	466	58.5	589	12	US-10-621-693-53	Sequence 53, Appl
18	466	58.5	786	12	US-10-621-693-55	Sequence 55, Appl
19	466	58.5	810	12	US-10-621-693-76	Sequence 76, Appl
20	464	58.2	191	16	US-10-658-834A-875	Sequence 875, App
21	463	58.1	191	16	US-10-658-834A-866	Sequence 866, App
22	463	58.1	191	16	US-10-658-834A-876	Sequence 876, App
23	463	58.1	191	16	US-10-658-834A-887	Sequence 887, App
24	462	58.0	191	16	US-10-658-834A-867	Sequence 867, App
25	462	58.0	191	16	US-10-658-834A-881	Sequence 881, App
26	462	58.0	191	16	US-10-658-834A-888	Sequence 888, App
27	461	57.8	191	10	US-09-984-010-23	Sequence 23, Appl
28	461	57.8	191	12	US-10-646-798-2	Sequence 2, Appli
29	461	57.8	191	12	US-10-621-693-2	Sequence 2, Appli
30	461	57.8	191	12	US-10-621-693-21	Sequence 21, Appl
31	461	57.8	191	12	US-10-621-693-80	Sequence 80, Appl
32	461	57.8	191	12	US-10-621-693-82	Sequence 82, Appl
33	461	57.8	191	12	US-10-621-693-84	Sequence 84, Appl
34	461	57.8	191	14	US-10-153-207-1	Sequence 1, Appli
35	461	57.8	191	14	US-10-400-377-1	Sequence 1, Appli
36	461	57.8	191	14	US-10-400-708-1	Sequence 1, Appli
37	461	57.8	191	14	US-10-298-148-1	Sequence 1, Appli
38	461	57.8	191	16	US-10-718-340-1	Sequence 1, Appli
39	461	57.8	191	16	US-10-658-834A-868	Sequence 868, App
40	461	57.8	191	16	US-10-658-834A-869	Sequence 869, App
41	461	57.8	191	16	US-10-658-834A-870	Sequence 870, App
42	461	57.8	191	16	US-10-658-834A-871	Sequence 871, App
43	461	57.8	191	16	US-10-658-834A-883	Sequence 883, App
44	461	57.8	191	16	US-10-658-834A-884	Sequence 884, App
45	461	57.8	191	16	US-10-658-834A-885	Sequence 885, App

ALIGNMENTS

RESULT 1
US-10-054-873-7
; Sequence 7, Application US/10054873
; Publication No. US20020164712A1
; GENERAL INFORMATION:
; APPLICANT: Gan, Zhong Ru

```
;         TITLE OF INVENTION: Chimeric Protein Containing an
;                             Intramolecular Chaperone-Like Sequence
;         NUMBER OF SEQUENCES: 7
;         CORRESPONDENCE ADDRESS:
;              ADDRESSEE: Townsend and Townsend and Crew LLP
;              STREET: Two Embarcadero Center, Eighth Floor
;              CITY: San Francisco
;              STATE: California
;              COUNTRY: USA
;              ZIP: 94111-3834
;         COMPUTER READABLE FORM:
;              MEDIUM TYPE: Floppy disk
;              COMPUTER: IBM PC compatible
;              OPERATING SYSTEM: PC-DOS/MS-DOS
;              SOFTWARE: PatentIn Release #1.0, Version #1.30
;         CURRENT APPLICATION DATA:
;              APPLICATION NUMBER: US/10/054,873
;              FILING DATE: 22-Jan-2002
;              CLASSIFICATION: <Unknown>
;         PRIOR APPLICATION DATA:
;              APPLICATION NUMBER: WO PCT/CN98/00052
;              FILING DATE: 31-MAR-1998
;              APPLICATION NUMBER: US 09/423,100
;              FILING DATE: 11-DEC-2000
;         ATTORNEY/AGENT INFORMATION:
;              NAME: Mycroft, Frank J
;              REGISTRATION NUMBER: 46,946
;              REFERENCE/DOCKET NUMBER: 020167-000130US
;    INFORMATION FOR SEQ ID NO: 7:
;         SEQUENCE CHARACTERISTICS:
;              LENGTH: 150 amino acids
;              TYPE: amino acid
;              STRANDEDNESS: <Unknown>
;              TOPOLOGY: linear
;         MOLECULE TYPE: protein
;         SEQUENCE DESCRIPTION: SEQ ID NO: 7:
US-10-054-873-7

  Query Match             100.0%;  Score 797;  DB 13;  Length 150;
  Best Local Similarity   100.0%;  Pred. No. 2e-80;
  Matches  150;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120

Qy        121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150
              ||||||||||||||||||||||||||||||
Db        121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150


RESULT 2
US-10-054-873-6
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; Sequence 6, Application US/10054873
; Publication No. US20020164712A1
;   GENERAL INFORMATION:
;        APPLICANT: Gan, Zhong Ru
;        TITLE OF INVENTION: Chimeric Protein Containing an
;                            Intramolecular Chaperone-Like Sequence
;        NUMBER OF SEQUENCES: 7
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Townsend and Townsend and Crew LLP
;             STREET: Two Embarcadero Center, Eighth Floor
;             CITY: San Francisco
;             STATE: California
;             COUNTRY: USA
;             ZIP: 94111-3834
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Floppy disk
;             COMPUTER: IBM PC compatible
;             OPERATING SYSTEM: PC-DOS/MS-DOS
;             SOFTWARE: PatentIn Release #1.0, Version #1.30
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/054,873
;             FILING DATE: 22-Jan-2002
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: WO PCT/CN98/00052
;             FILING DATE: 31-MAR-1998
;             APPLICATION NUMBER: US 09/423,100
;             FILING DATE: 11-DEC-2000
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Mycroft, Frank J
;             REGISTRATION NUMBER: 46,946
;             REFERENCE/DOCKET NUMBER: 020167-000130US
;   INFORMATION FOR SEQ ID NO: 6:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 107 amino acids
;             TYPE: amino acid
;             STRANDEDNESS: <Unknown>
;             TOPOLOGY: linear
;        MOLECULE TYPE: protein
;        SEQUENCE DESCRIPTION: SEQ ID NO: 6:
US-10-054-873-6

  Query Match             69.7%;  Score 555.5;  DB 13;  Length 107;
  Best Local Similarity   71.3%;  Pred. No. 9.6e-54;
  Matches  107;  Conservative    0;  Mismatches    0;  Indels   43;  Gaps    1;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNP---------- 49

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLVCGER 120
                                           ||||||||||||||||||||||||||||
Db         50 ---------------------------------LGTGPRFVNQHLCGSHLVEALYLVCGER 77

Qy        121 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 150
              ||||||||||||||||||||||||||||||
Db         78 GFFYTPKTRGIVEQCCTSICSLYQLENYCN 107
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RESULT 3
US-10-054-873-2
; Sequence 2, Application US/10054873
; Publication No. US20020164712A1
;   GENERAL INFORMATION:
;        APPLICANT: Gan, Zhong Ru
;        TITLE OF INVENTION: Chimeric Protein Containing an
;                            Intramolecular Chaperone-Like Sequence
;        NUMBER OF SEQUENCES: 7
;        CORRESPONDENCE ADDRESS:
;             ADDRESSEE: Townsend and Townsend and Crew LLP
;             STREET: Two Embarcadero Center, Eighth Floor
;             CITY: San Francisco
;             STATE: California
;             COUNTRY: USA
;             ZIP: 94111-3834
;        COMPUTER READABLE FORM:
;             MEDIUM TYPE: Floppy disk
;             COMPUTER: IBM PC compatible
;             OPERATING SYSTEM: PC-DOS/MS-DOS
;             SOFTWARE: PatentIn Release #1.0, Version #1.30
;        CURRENT APPLICATION DATA:
;             APPLICATION NUMBER: US/10/054,873
;             FILING DATE: 22-Jan-2002
;             CLASSIFICATION: <Unknown>
;        PRIOR APPLICATION DATA:
;             APPLICATION NUMBER: WO PCT/CN98/00052
;             FILING DATE: 31-MAR-1998
;             APPLICATION NUMBER: US 09/423,100
;             FILING DATE: 11-DEC-2000
;        ATTORNEY/AGENT INFORMATION:
;             NAME: Mycroft, Frank J
;             REGISTRATION NUMBER: 46,946
;             REFERENCE/DOCKET NUMBER: 020167-000130US
;   INFORMATION FOR SEQ ID NO: 2:
;        SEQUENCE CHARACTERISTICS:
;             LENGTH: 92 amino acids
;             TYPE: amino acid
;             STRANDEDNESS: <Unknown>
;             TOPOLOGY: linear
;        MOLECULE TYPE: protein
;        SEQUENCE DESCRIPTION: SEQ ID NO: 2:
US-10-054-873-2

  Query Match             59.0%;  Score 470;  DB 13;  Length 92;
  Best Local Similarity   100.0%;  Pred. No. 2.6e-44;
  Matches   92;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              ||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
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RESULT 4
US-09-819-094-24
; Sequence 24, Application US/09819094
; Publication No. US20030186382A1
; GENERAL INFORMATION:
; APPLICANT: Weiner, Richard I.
; APPLICANT: Martial, Joseph A.
; APPLICANT: Struman, Ingrid
; APPLICANT: Taylor, Robert
; APPLICANT: Bentzien, Frauke
; TITLE OF INVENTION: No. US20030186382A1el Antiangiogenic Peptide Agents and
Their
; TITLE OF INVENTION: Therapeutic and Diagnostic Use
; FILE REFERENCE: UCSF-018/02US
; CURRENT APPLICATION NUMBER: US/09/819,094
; CURRENT FILING DATE: 2001-03-27
; PRIOR APPLICATION NUMBER: 09/076,675
; PRIOR FILING DATE: 1998-05-12
; PRIOR APPLICATION NUMBER: 60/046,394
; PRIOR FILING DATE: 1997-05-12
; NUMBER OF SEQ ID NOS: 34
; SEQ ID NO 24
; LENGTH: 134
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-819-094-24

Query Match 59.0%; Score 470; DB 10; Length 134;
Best Local Similarity 100.0%; Pred. No. 4.3e-44;
Matches 92; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              ||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
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RESULT 5
US-10-714-067-24
; Sequence 24, Application US/10714067
; Publication No. US20040077054A1
; GENERAL INFORMATION:
; APPLICANT: Weiner, Richard I.
; APPLICANT: Martial, Joseph A.
; APPLICANT: Struman, Ingrid
; APPLICANT: Taylor, Robert
; APPLICANT: Bentzien, Frauke
; TITLE OF INVENTION: Novel Antiangiogenic Peptide Agents and Their
; TITLE OF INVENTION: Therapeutic and Diagnostic Use
; FILE REFERENCE: UCSF-018/02US
; CURRENT APPLICATION NUMBER: US/10/714,067
; CURRENT FILING DATE: 2003-11-14

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;  PRIOR APPLICATION NUMBER: US/09/819,094
;  PRIOR FILING DATE: 2001-03-27
;  PRIOR APPLICATION NUMBER: 09/076,675
;  PRIOR FILING DATE: 1998-05-12
;  PRIOR APPLICATION NUMBER: 60/046,394
;  PRIOR FILING DATE: 1997-05-12
;  NUMBER OF SEQ ID NOS: 34
; SEQ ID NO 24
;   LENGTH: 134
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-714-067-24

  Query Match             59.0%;  Score 470;  DB 16;  Length 134;
  Best Local Similarity   100.0%;  Pred. No. 4.3e-44;
  Matches   92;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              ||||||||||||||||||||||||||||||||
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQ 92


RESULT 6
US-10-621-693-18
; Sequence 18, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
;  APPLICANT: Gentide Biopharmaceuticals, Inc.
;  APPLICANT:  Bussell, Stuart
;  TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN
SEQUENCES AS
;  TITLE OF INVENTION:  DIRECT FUSIONS OR WITH LINKERS
;  FILE REFERENCE: GNT-00101.P.1-US
;  CURRENT APPLICATION NUMBER: US/10/621,693
;  CURRENT FILING DATE:  2003-07-16
;  PRIOR APPLICATION NUMBER: US 60/396,466
;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 18
;   LENGTH: 188
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: synthetic sequence
US-10-621-693-18

  Query Match             58.5%;  Score 466;  DB 12;  Length 188;
  Best Local Similarity   70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
```

```
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 7
US-09-819-094-23
; Sequence 23, Application US/09819094
; Publication No. US20030186382A1
; GENERAL INFORMATION:
;  APPLICANT: Weiner, Richard I.
;  APPLICANT:  Martial, Joseph A.
;  APPLICANT:  Struman, Ingrid
;  APPLICANT:  Taylor, Robert
;  APPLICANT:  Bentzien, Frauke
;  TITLE OF INVENTION: No. US20030186382A1el Antiangiogenic Peptide Agents and
Their
;  TITLE OF INVENTION:  Therapeutic and Diagnostic Use
;  FILE REFERENCE: UCSF-018/02US
;  CURRENT APPLICATION NUMBER: US/09/819,094
;  CURRENT FILING DATE:  2001-03-27
;  PRIOR APPLICATION NUMBER: 09/076,675
;  PRIOR FILING DATE: 1998-05-12
;  PRIOR APPLICATION NUMBER: 60/046,394
;  PRIOR FILING DATE: 1997-05-12
;  NUMBER OF SEQ ID NOS: 34
; SEQ ID NO 23
;   LENGTH: 192
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-09-819-094-23

  Query Match             58.5%;  Score 466;  DB 10;  Length 192;
  Best Local Similarity   70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 8
US-10-621-693-8
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; Sequence 8, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
; APPLICANT: Gentide Biopharmaceuticals, Inc.
; APPLICANT: Bussell, Stuart
; TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN SEQUENCES AS
; TITLE OF INVENTION: DIRECT FUSIONS OR WITH LINKERS
; FILE REFERENCE: GNT-00101.P.1-US
; CURRENT APPLICATION NUMBER: US/10/621,693
; CURRENT FILING DATE: 2003-07-16
; PRIOR APPLICATION NUMBER: US 60/396,466
; PRIOR FILING DATE: 2002-07-16
; NUMBER OF SEQ ID NOS: 86
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 8
; LENGTH: 192
; TYPE: PRT
; ORGANISM: Artificial
; FEATURE:
; OTHER INFORMATION: synthetic sequence
; FEATURE:
; NAME/KEY: mat_peptide
; LOCATION: (1)..()
US-10-621-693-8

Query Match 58.5%; Score 466; DB 12; Length 192;
Best Local Similarity 70.5%; Pred. No. 1.9e-43;
Matches 103; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

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Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142
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RESULT 9
US-10-621-693-78
; Sequence 78, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
; APPLICANT: Gentide Biopharmaceuticals, Inc.
; APPLICANT: Bussell, Stuart
; TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN SEQUENCES AS
; TITLE OF INVENTION: DIRECT FUSIONS OR WITH LINKERS
; FILE REFERENCE: GNT-00101.P.1-US
; CURRENT APPLICATION NUMBER: US/10/621,693
; CURRENT FILING DATE: 2003-07-16
; PRIOR APPLICATION NUMBER: US 60/396,466

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;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 78
;   LENGTH: 192
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: synthetic sequence
US-10-621-693-78

  Query Match           58.5%;  Score 466;  DB 12;  Length 192;
  Best Local Similarity  70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              ||||||||||||||||||||||||||||||      | |  : |:          |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 10
US-10-621-693-86
; Sequence 86, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
;  APPLICANT: Gentide Biopharmaceuticals, Inc.
;  APPLICANT:  Bussell, Stuart
;  TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN
SEQUENCES AS
;  TITLE OF INVENTION:  DIRECT FUSIONS OR WITH LINKERS
;  FILE REFERENCE: GNT-00101.P.1-US
;  CURRENT APPLICATION NUMBER: US/10/621,693
;  CURRENT FILING DATE:  2003-07-16
;  PRIOR APPLICATION NUMBER: US 60/396,466
;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 86
;   LENGTH: 192
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: synthetic sequence
;   FEATURE:
;   NAME/KEY: MISC_FEATURE
;   LOCATION: (2)..(192)
;   OTHER INFORMATION: sequence is repeated N+2 times, where N is a positive
whole numbe
;   FEATURE:
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;   NAME/KEY: mat_peptide
;   LOCATION: (1)..()
US-10-621-693-86

  Query Match             58.5%;  Score 466;  DB 12;  Length 192;
  Best Local Similarity   70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              |||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 11
US-10-714-067-23
; Sequence 23, Application US/10714067
; Publication No. US20040077054A1
; GENERAL INFORMATION:
;  APPLICANT: Weiner, Richard I.
;  APPLICANT:  Martial, Joseph A.
;  APPLICANT:  Struman, Ingrid
;  APPLICANT:  Taylor, Robert
;  APPLICANT:  Bentzien, Frauke
;  TITLE OF INVENTION: Novel Antiangiogenic Peptide Agents and Their
;  TITLE OF INVENTION:  Therapeutic and Diagnostic Use
;  FILE REFERENCE: UCSF-018/02US
;  CURRENT APPLICATION NUMBER: US/10/714,067
;  CURRENT FILING DATE:  2003-11-14
;  PRIOR APPLICATION NUMBER: US/09/819,094
;  PRIOR FILING DATE: 2001-03-27
;  PRIOR APPLICATION NUMBER: 09/076,675
;  PRIOR FILING DATE: 1998-05-12
;  PRIOR APPLICATION NUMBER: 60/046,394
;  PRIOR FILING DATE: 1997-05-12
;  NUMBER OF SEQ ID NOS: 34
; SEQ ID NO 23
;   LENGTH: 192
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-714-067-23

  Query Match             58.5%;  Score 466;  DB 16;  Length 192;
  Best Local Similarity   70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60
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Qy          61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
               ||||||||||||||||||||||||||||||||      | |  : |:           |
Db          61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy         111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
               | :  : |  | |   :|:|  | :|
Db         120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 12
US-10-621-693-42
; Sequence 42, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
;  APPLICANT: Gentide Biopharmaceuticals, Inc.
;  APPLICANT:  Bussell, Stuart
;  TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN
SEQUENCES AS
;  TITLE OF INVENTION:  DIRECT FUSIONS OR WITH LINKERS
;  FILE REFERENCE: GNT-00101.P.1-US
;  CURRENT APPLICATION NUMBER: US/10/621,693
;  CURRENT FILING DATE:  2003-07-16
;  PRIOR APPLICATION NUMBER: US 60/396,466
;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 42
;   LENGTH: 193
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: synthetic sequence
US-10-621-693-42

  Query Match             58.5%;  Score 466;  DB 12;  Length 193;
  Best Local Similarity   70.5%;  Pred. No. 1.9e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              |||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
               ||||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
               | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 13
US-10-621-693-72
; Sequence 72, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
;  APPLICANT: Gentide Biopharmaceuticals, Inc.
```

```
;  APPLICANT:  Bussell, Stuart
;  TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN
SEQUENCES AS
;  TITLE OF INVENTION:  DIRECT FUSIONS OR WITH LINKERS
;  FILE REFERENCE: GNT-00101.P.1-US
;  CURRENT APPLICATION NUMBER: US/10/621,693
;  CURRENT FILING DATE:  2003-07-16
;  PRIOR APPLICATION NUMBER: US 60/396,466
;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 72
;   LENGTH: 206
;   TYPE: PRT
;   ORGANISM: Artificial
;   FEATURE:
;   OTHER INFORMATION: synthetic sequence
US-10-621-693-72

  Query Match             58.5%;  Score 466;  DB 12;  Length 206;
  Best Local Similarity   70.5%;  Pred. No. 2.1e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              ||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


RESULT 14
US-10-621-693-51
; Sequence 51, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
;  APPLICANT: Gentide Biopharmaceuticals, Inc.
;  APPLICANT:  Bussell, Stuart
;  TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN
SEQUENCES AS
;  TITLE OF INVENTION:  DIRECT FUSIONS OR WITH LINKERS
;  FILE REFERENCE: GNT-00101.P.1-US
;  CURRENT APPLICATION NUMBER: US/10/621,693
;  CURRENT FILING DATE:  2003-07-16
;  PRIOR APPLICATION NUMBER: US 60/396,466
;  PRIOR FILING DATE: 2002-07-16
;  NUMBER OF SEQ ID NOS: 86
;  SOFTWARE: PatentIn version 3.0
; SEQ ID NO 51
;   LENGTH: 391
;   TYPE: PRT
;   ORGANISM: Artificial
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; FEATURE:
; OTHER INFORMATION: synthetic sequence
; FEATURE:
; NAME/KEY: mat_peptide
; LOCATION: (1)..()
US-10-621-693-51

  Query Match 58.5%; Score 466; DB 12; Length 391;
  Best Local Similarity 70.5%; Pred. No. 4.9e-43;
  Matches 103; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

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Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              ||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142
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RESULT 15
US-10-621-693-32
; Sequence 32, Application US/10621693
; Publication No. US20040059093A1
; GENERAL INFORMATION:
; APPLICANT: Gentide Biopharmaceuticals, Inc.
; APPLICANT: Bussell, Stuart
; TITLE OF INVENTION: METHODS TO CONSTRUCT MULTIMERIC DNA AND POLYMERIC PROTEIN SEQUENCES AS
; TITLE OF INVENTION: DIRECT FUSIONS OR WITH LINKERS
; FILE REFERENCE: GNT-00101.P.1-US
; CURRENT APPLICATION NUMBER: US/10/621,693
; CURRENT FILING DATE: 2003-07-16
; PRIOR APPLICATION NUMBER: US 60/396,466
; PRIOR FILING DATE: 2002-07-16
; NUMBER OF SEQ ID NOS: 86
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 32
; LENGTH: 574
; TYPE: PRT
; ORGANISM: Artificial
; FEATURE:
; OTHER INFORMATION: synthetic sequence
; FEATURE:
; NAME/KEY: MISC_FEATURE
; LOCATION: (379)..(569)
; OTHER INFORMATION: sequence is repeated N-1 times, where N is a positive whole numbe
; FEATURE:
; NAME/KEY: mat_peptide
; LOCATION: (1)..()
US-10-621-693-32

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  Query Match             58.5%;  Score 466;  DB 12;  Length 574;
  Best Local Similarity   70.5%;  Pred. No. 8.2e-43;
  Matches  103;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIP 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||| ||||||
Db          1 MFPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIP 60

Qy         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLV 110
              ||||||||||||||||||||||||||||||      | |  : |:           |
Db         61 TPSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLE 119

Qy        111 EALYLVCG--ERGFFYTPKTRGIVEQ 134
              | :  : |  | |   :|:|  | :|
Db        120 EGIQTLMGRLEDG---SPRTGQIFKQ 142


Search completed: July 15, 2004, 17:05:09
Job time : 62.4067 secs
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GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 15, 2004, 16:29:19 ; Search time 16.791 Seconds
(without alignments)
859.311 Million cell updates/sec

Title: US-09-423-100-7
Perfect score: 797
Sequence: 1 MFPTIPLSRLFDNAMLRAHR.....IVEQCCTSICSLYQLENYCN 150

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283366 seqs, 96191526 residues

Total number of hits satisfying chosen parameters: 283366

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR_78:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	461	57.8	217	1	STHU	somatotropin 1 pre
2	460	57.7	217	2	I67410	somatotropin - rhe
3	426.5	53.5	217	1	STHUV	somatotropin 2 pre
4	426.5	53.5	256	1	STHUV2	somatotropin 2 pre
5	407.5	51.1	217	2	I67409	chorionic somatoma
6	405	50.8	217	2	I67411	somatotropin - rhe
7	396	49.7	212	2	I67408	chorionic somatoma
8	396	49.7	217	2	I53267	chorionic somatoma
9	381	47.8	217	1	LCHUC	choriomammotropin
10	381	47.8	217	2	E32435	choriomammotropin
11	359.5	45.1	215	2	A26449	choriomammotropin
12	310.5	39.0	216	2	B49159	somatotropin - gol
13	307.5	38.6	190	2	PN0140	somatotropin - sei

14	306.5	38.5	190	1	STHO	somatotropin - hor
15	304.5	38.2	216	1	STMS	somatotropin precu
16	302.5	38.0	216	1	STRT	somatotropin precu
17	302.5	38.0	216	2	S49483	somatotropin precu
18	301.5	37.8	190	2	JK0219	somatotropin - Afr
19	301.5	37.8	216	1	STPG	somatotropin precu
20	301.5	37.8	216	2	I46145	somatotropin precu
21	301.5	37.8	216	2	JC4632	somatotropin precu
22	299.5	37.6	216	2	A37782	somatotropin precu
23	297.5	37.3	190	1	A61584	somatotropin - alp
24	295.5	37.1	190	2	JS0429	somatotropin - Arc
25	289.5	36.3	217	1	STBO	somatotropin precu
26	289.5	36.3	217	1	STSH	somatotropin precu
27	289.5	36.3	217	1	STGT	somatotropin precu
28	289.5	36.3	217	2	S32682	somatotropin - dom
29	278.5	34.9	216	2	JC1514	somatotropin precu
30	277.5	34.8	110	1	INRB	insulin precursor
31	277.5	34.8	110	2	B42179	insulin precursor
32	275.5	34.6	216	2	A60509	somatotropin precu
33	275	34.5	96	2	PC7082	epidermal growth f
34	273.5	34.3	51	1	INWHP	insulin - sperm wh
35	273.5	34.3	51	1	INWHF	insulin - finback
36	273.5	34.3	51	1	INEL	insulin - elephant
37	273.5	34.3	110	2	JQ0178	insulin precursor
38	272	34.1	110	2	A42179	insulin precursor
39	271.5	34.1	51	1	INHY	insulin - hamster
40	270	33.9	110	1	IPHU	insulin precursor
41	268.5	33.7	51	1	INMSSP	insulin - Egyptian
42	268.5	33.7	191	2	A60625	somatotropin - gre
43	267.5	33.6	51	2	A59151	insulin precursor
44	266.5	33.4	105	1	IPBO	insulin precursor
45	265.5	33.3	110	2	I48166	insulin precursor

ALIGNMENTS

RESULT 1
STHU
somatotropin 1 precursor [validated] - human
N;Alternate names: growth hormone 1; hGH-N; pituitary somatotropin
N;Contains: growth hormone 5K peptide; somatotropin 1, long form; somatotropin 1, short form
C;Species: Homo sapiens (man)
C;Date: 24-Apr-1984 #sequence_revision 10-Feb-1995 #text_change 08-Dec-2000
C;Accession: A93731; A32435; A93694; A94247; A90051; A93397; A93778; A91764; A90217; A92311; A61466; S09685; I84549; A01510
R;DeNoto, F.M.; Moore, D.D.; Goodman, H.M.
Nucleic Acids Res. 9, 3719-3730, 1981
A;Title: Human growth hormone DNA sequence and mRNA structure: possible alternative splicing.
A;Reference number: A93731; MUID:82014939; PMID:6269091
A;Accession: A93731
A;Molecule type: DNA
A;Residues: 1-217 <DEN>
A;Cross-references: GB:V00520

A;Note: the 20K short form somatotropin lacks residues 58-72 (32-46 in the active hormone) as the result of splicing at the alternate junction of the second intron during mRNA processing
R;Chen, E.Y.; Liao, Y.C.; Smith, D.H.; Barrera-Saldana, H.A.; Gelinas, R.E.; Seeburg, P.H.
Genomics 4, 479-497, 1989
A;Title: The human growth hormone locus: nucleotide sequence, biology, and evolution.
A;Reference number: A32435; MUID:89307277; PMID:2744760
A;Accession: A32435
A;Molecule type: DNA
A;Residues: 1-217 <CHE>
A;Cross-references: GB:J03071; NID:g183148; PIDN:AAA52549.1; PID:g183149
R;Roskam, W.; Rougeon, F.
Nucleic Acids Res. 7, 305-320, 1979
A;Title: Molecular cloning and nucleotide sequence of the human growth hormone structural gene.
A;Reference number: A93694; MUID:80034477; PMID:386281
A;Accession: A93694
A;Molecule type: mRNA
A;Residues: 1-217 <ROS>
A;Cross-references: GB:V00519
A;Note: 35-Pro was also found
R;Martial, J.A.; Hallewell, R.A.; Baxter, J.D.; Goodman, H.M.
Science 205, 602-607, 1979
A;Title: Human growth hormone: complementary DNA cloning and expression in bacteria.
A;Reference number: A94247; MUID:79203293; PMID:377496
A;Accession: A94247
A;Molecule type: mRNA
A;Residues: 1-217 <MAR>
R;Li, C.H.; Dixon, J.S.; Liu, W.K.
Arch. Biochem. Biophys. 133, 70-91, 1969
A;Title: Human pituitary growth hormone. XIX. The primary structure of the hormone.
A;Reference number: A90048; MUID:69289202; PMID:5810834
A;Contents: annotation
R;Li, C.H.; Dixon, J.S.
Arch. Biochem. Biophys. 146, 233-236, 1971
A;Title: Human pituitary growth hormone. XXXII. The primary structure of the hormone: revision.
A;Reference number: A90051; MUID:72143935; PMID:5144027
A;Accession: A90051
A;Molecule type: protein
A;Residues: 27-94;96-217 <LIC>
R;Niall, H.D.
Nature New Biol. 230, 90-91, 1971
A;Title: Revised primary structure for human growth hormone.
A;Reference number: A93397; MUID:71139765; PMID:5279046
A;Accession: A93397
A;Molecule type: protein
A;Residues: 27-51 <NIA>
R;Niall, H.D.; Hogan, M.L.; Sauer, R.; Rosenblum, I.Y.; Greenwood, F.C.
Proc. Natl. Acad. Sci. U.S.A. 68, 866-869, 1971
A;Title: Sequences of pituitary and placental lactogenic and growth hormones: evolution from a primordial peptide by gene reduplication.
A;Reference number: A93778; MUID:71153968; PMID:5279528

A;Accession: A93778
A;Molecule type: protein
A;Residues: 119-120;157-159 <NI2>
R;Niall, H.D.
in Prolactin and Carcinogenesis, Proc. Fourth Tenovus Workshop Prolactin, Griffiths, K., ed., pp.13-20, Alpha Omega Alpha Press, Cardiff, Wales, 1972
A;Title: The chemistry of the human lactogenic hormones.
A;Reference number: A94427
A;Contents: annotation; somatotropin revision
R;Bewley, T.A.; Dixon, J.S.; Li, C.H.
Int. J. Pept. Protein Res. 4, 281-287, 1972
A;Title: Sequence comparison of human pituitary growth hormone, human chorionic somatomammotropin, and ovine pituitary growth and lactogenic hormones.
A;Reference number: A91764; MUID:73092028; PMID:4675454
A;Accession: A91764
A;Molecule type: protein
A;Residues: 27-217 <BEW>
R;Lewis, U.J.; Bonewald, L.F.; Lewis, L.J.
Biochem. Biophys. Res. Commun. 92, 511-516, 1980
A;Title: The 20,000-dalton variant of human growth hormone: location of the amino acid deletions.
A;Reference number: A90217; MUID:80130196; PMID:7356479
A;Contents: somatotropin, 20K short variant
A;Accession: A90217
A;Molecule type: protein
A;Residues: 46-57;73-80 <LEW>
R;Chapman, G.E.; Rogers, K.M.; Brittain, T.; Bradshaw, R.A.; Bates, O.J.; Turner, C.; Cary, P.D.; Crane-Robinson, C.
J. Biol. Chem. 256, 2395-2401, 1981
A;Title: The 20,000 molecular weight variant of human growth hormone. Preparation and some physical and chemical properties.
A;Reference number: A92311; MUID:81117361; PMID:7462247
A;Contents: somatotropin, 20K short variant
A;Accession: A92311
A;Molecule type: protein
A;Residues: 27-57;73-79 <CHA>
R;Singh, R.N.P.; Seavey, B.K.; Lewis, L.J.; Lewis, U.J.
J. Protein Chem. 2, 425-436, 1983
A;Title: Human growth hormone peptide 1-43: isolation from pituitary glands.
A;Reference number: A61466
A;Accession: A61466
A;Molecule type: protein
A;Residues: 27-69 <SIN>
A;Note: growth hormone 5K peptide has insulin potentiating activity; its physiological production is uncertain
R;Robson, V.M.J.; Rae, I.D.; NG, F.
Biol. Chem. Hoppe-Seyler 371, 423-431, 1990
A;Title: Identification of the aspartimide structure in a previously-reported peptide.
A;Reference number: S09685; MUID:90334745; PMID:2378679
A;Accession: S09685
A;Molecule type: protein
A;Residues: 27-34,'L',36-47 <ROB>
R;de Vos, A.M.; Ultsch, M.; Kossiakoff, A.A.
Science 255, 306-312, 1992
A;Title: Human growth hormone and extracellular domain of its receptor: crystal structure of the complex.

A;Reference number: A41728; MUID:92196577; PMID:1549776
A;Contents: annotation; X-ray crystallography, 2.8 angstroms
A;Note: the structure of the complex with growth hormone receptor is described
R;Gray, G.L.; Baldridge, J.S.; McKeown, K.S.; Heyneker, H.L.; Chang, C.N.
Gene 39, 247-254, 1985
A;Title: Periplasmic production of correctly processed human growth hormone in
Escherichia coli: natural and bacterial signal sequences are interchangeable.
A;Reference number: I41126; MUID:86137393; PMID:3912261
A;Accession: I84549
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-26 <RES>
A;Cross-references: GB:M14398; NID:g183158; PIDN:AAA52554.1; PID:g183159
C;Comment: The gene for this hormone is transcribed only in somatotrophic cells
of the anterior pituitary.
C;Comment: About 90% of somatotropin is the 22K long form.
C;Genetics:
A;Gene: GDB:GH1
A;Cross-references: GDB:119982; OMIM:139250
A;Map position: 17q23.1-17q23.3
A;Introns: 4/1; 57/3; 97/3; 152/3
C;Superfamily: prolactin
C;Keywords: alternative splicing; hormone; pituitary
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-217/Product: somatotropin 1, long form #status experimental <SOL>
F;27-69/Product: growth hormone 5K peptide #status experimental <5KP>
F;27-57,73-217/Product: somatotropin 1, short form #status experimental <SOS>
F;79-191,208-215/Disulfide bonds: #status experimental

  Query Match 57.8%; Score 461; DB 1; Length 217;
  Best Local Similarity 70.3%; Pred. No. 7.6e-38;
  Matches 102; Conservative 7; Mismatches 20; Indels 16; Gaps 4;

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              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
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Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  | :|
Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167
```

RESULT 2
I67410
somatotropin - rhesus macaque
N;Alternate names: growth hormone
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 31-May-1996 #sequence_revision 31-May-1996 #text_change 16-Jul-1999
C;Accession: I67410; A05094
R;Golos, T.G.; Durning, M.; Fisher, J.M.; Fowler, P.D.
Endocrinology 133, 1744-1752, 1993

A;Title: Cloning of four growth hormone/chorionic somatomammotropin-related complementary deoxyribonucleic acids differentially expressed during pregnancy in the rhesus monkey placenta.
A;Reference number: I53267; MUID:94008724; PMID:8404617
A;Accession: I67410
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-217 <RES>
A;Cross-references: GB:L16556; NID:g293114; PIDN:AAA18842.1; PID:g293115
R;Li, C.H.; Chung, D.; Lahm, H.W.; Stein, S.
Arch. Biochem. Biophys. 245, 287-291, 1986
A;Title: The primary structure of monkey pituitary growth hormone.
A;Reference number: A05094; MUID:86129460; PMID:3080959
A;Accession: A05094
A;Molecule type: protein
A;Residues: 27-99,'Q',101-178,'D',180-217 <LIC>
A;Note: the monkey species is not identified in the reference
R;Raben, M.S.
Science 125, 883-884, 1957
A;Title: Preparation of growth hormone from pituitaries of man and monkey.
A;Reference number: A44774
A;Contents: annotation; identification of source organism
C;Superfamily: prolactin

  Query Match   57.7%; Score 460; DB 2; Length 217;
  Best Local Similarity   98.9%; Pred. No. 9.5e-38;
  Matches   90; Conservative   0; Mismatches   1; Indels   0; Gaps   0;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 117
```

RESULT 3
STHUV
somatotropin 2 precursor - human
N;Alternate names: growth hormone 2; growth hormone variant; hGH-V; placental somatotropin
N;Contains: somatotropin 2, long splice form; somatotropin 2, short splice form
C;Species: Homo sapiens (man)
C;Date: 17-Dec-1982 #sequence_revision 10-Feb-1995 #text_change 21-Jul-2000
C;Accession: D32435; B28072; A01511; I52104; A60711
R;Chen, E.Y.; Liao, Y.C.; Smith, D.H.; Barrera-Saldana, H.A.; Gelinas, R.E.; Seeburg, P.H.
Genomics 4, 479-497, 1989
A;Title: The human growth hormone locus: nucleotide sequence, biology, and evolution.
A;Reference number: A32435; MUID:89307277; PMID:2744760
A;Accession: D32435
A;Molecule type: DNA
A;Residues: 1-217 <CHE>
A;Cross-references: GB:J03071; NID:g183148; PIDN:AAA52552.1; PID:g183152
R;Cooke, N.E.; Ray, J.; Emery, J.G.; Liebhaber, S.A.

J. Biol. Chem. 263, 9001-9006, 1988
A;Title: Two distinct species of human growth hormone-variant mRNA in the human placenta predict the expression of novel growth hormone proteins.
A;Reference number: A92725; MUID:88243769; PMID:3379057
A;Accession: B28072
A;Molecule type: mRNA
A;Residues: 1-217 <COO>
R;Seeburg, P.H.
DNA 1, 239-249, 1982
A;Title: The human growth hormone gene family: nucleotide sequences show recent divergence and predict a new polypeptide hormone.
A;Reference number: A01511; MUID:83182010; PMID:7169009
A;Accession: A01511
A;Molecule type: DNA
A;Residues: 1-34,'P',36-217 <SEE>
R;Igout, A.; Scippo, M.L.; Frankenne, F.; Hennen, G.
Arch. Int. Physiol. Biochim. 96, 63-67, 1988
A;Title: Cloning and nucleotide sequence of placental hGH-V cDNA.
A;Reference number: I52104; MUID:89024984; PMID:2460050
A;Accession: I52104
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-217 <IGO>
A;Cross-references: GB:M38451; NID:g183179; PIDN:AAA35891.1; PID:g183180
R;Frankenne, F.; Scippo, M.L.; Van Beeumen, J.; Igout, A.; Hennen, G.
J. Clin. Endocrinol. Metab. 71, 15-18, 1990
A;Title: Identification of placental human growth hormone as the growth hormone-V gene expression product.
A;Reference number: A60711; MUID:90317018; PMID:2196278
A;Accession: A60711
A;Molecule type: protein
A;Residues: 27-44;46-57 <FRA>
A;Experimental source: tissue placenta
A;Note: partial glycosylation was demonstrated by lectin binding
C;Comment: This gene is expressed by the placenta.
C;Genetics:
A;Gene: GDB:GH2
A;Cross-references: GDB:119983; OMIM:139240
A;Map position: 17q22-17q24
A;Introns: 4/1; 57/3; 97/3; 152/3
C;Superfamily: prolactin
C;Keywords: alternative splicing; glycoprotein; hormone; placenta
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-217/Product: somatotropin 2, long splice form #status predicted <SOL>
F;27-57,73-217/Product: somatotropin 2, short splice form #status predicted <SOS>
F;79-191,208-215/Disulfide bonds: #status predicted
F;166/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 53.5%; Score 426.5; DB 1; Length 217;
Best Local Similarity 78.1%; Pred. No. 1.9e-34;
Matches 89; Conservative 4; Mismatches 10; Indels 11; Gaps 1;

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Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||| ||:|||:|||||||||| |||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRARRLYQLAYDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPT 86
```

```
Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL----------GTGPRFVNQHL 104
               ||||  :|||||||||||||||||||||||||           |     | :||
Db          87 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL 140
```

RESULT 4
STHUV2
somatotropin 2 precursor, splice form 2 - human
N;Alternate names: growth hormone variant-2; placental somatotropin form 2
C;Species: Homo sapiens (man)
C;Date: 30-Sep-1989 #sequence_revision 10-Feb-1995 #text_change 02-Sep-1997
C;Accession: A28072
R;Cooke, N.E.; Ray, J.; Emery, J.G.; Liebhaber, S.A.
J. Biol. Chem. 263, 9001-9006, 1988
A;Title: Two distinct species of human growth hormone-variant mRNA in the human placenta predict the expression of novel growth hormone proteins.
A;Reference number: A92725; MUID:88243769; PMID:3379057
A;Accession: A28072
A;Molecule type: mRNA
A;Residues: 1-256 <COO>
A;Note: an alternative splice junction for intron 4 is used
C;Genetics:
A;Gene: GDB:GH2
A;Cross-references: GDB:119983; OMIM:139240
A;Map position: 17q22-17q24
A;Introns: 4/1; 57/3; 97/3; 152/3
C;Superfamily: prolactin
C;Keywords: alternative splicing; hormone; placenta
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-256/Product: somatotropin 2 splice form 2 #status predicted <MAT>

```
  Query Match             53.5%;  Score 426.5;  DB 1;  Length 256;
  Best Local Similarity   78.1%;  Pred. No. 2.3e-34;
  Matches   89;  Conservative    4;  Mismatches   10;  Indels   11;  Gaps    1;

Qy           2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
               |||||||||||||||| ||:|||:|||||||||| |||||||||||||| |||||||
Db          27 FPTIPLSRLFDNAMLRARRLYQLAYDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPT 86

Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL----------GTGPRFVNQHL 104
               ||||  :|||||||||||||||||||||||||           |     | :||
Db          87 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL 140
```

RESULT 5
I67409
chorionic somatomammotropin-3 - rhesus macaque
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 31-May-1996 #sequence_revision 31-May-1996 #text_change 16-Jul-1999
C;Accession: I67409
R;Golos, T.G.; Durning, M.; Fisher, J.M.; Fowler, P.D.
Endocrinology 133, 1744-1752, 1993
A;Title: Cloning of four growth hormone/chorionic somatomammotropin-related complementary deoxyribonucleic acids differentially expressed during pregnancy in the rhesus monkey placenta.
A;Reference number: I53267; MUID:94008724; PMID:8404617
A;Accession: I67409

A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-217 <RES>
A;Cross-references: GB:L16554; NID:g293112; PIDN:AAA18841.1; PID:g293113
C;Superfamily: prolactin

  Query Match 51.1%; Score 407.5; DB 2; Length 217;
  Best Local Similarity 71.9%; Pred. No. 1.4e-32;
  Matches 82; Conservative 12; Mismatches 19; Indels 1; Gaps 1;

```
Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||| |::|||||||||||||||||: ||||||:|:| : ||| |  ||||||||
Db         28 PSVPLSRLFDNIMMQAHRLHQLAFDTYQEFEKTYIPKEKKHSLMGNPQASFCFSESIPTP 87

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLV 116
              |||||||||||||||||||||||||||||  |  | |  : |:   :|  |:
Db         88 SNREETQQKSNLELLRISLLLIQSWLEPVQL-LGSVFANNLVYGTSESDAYDLL 140
```

RESULT 6
I67411
somatotropin - rhesus macaque
N;Alternate names: growth hormone
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 31-May-1996 #sequence_revision 31-May-1996 #text_change 16-Jul-1999
C;Accession: I67411
R;Golos, T.G.; Durning, M.; Fisher, J.M.; Fowler, P.D.
Endocrinology 133, 1744-1752, 1993
A;Title: Cloning of four growth hormone/chorionic somatomammotropin-related complementary deoxyribonucleic acids differentially expressed during pregnancy in the rhesus monkey placenta.
A;Reference number: I53267; MUID:94008724; PMID:8404617
A;Accession: I67411
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-217 <RES>
A;Cross-references: GB:L16555; NID:g293116; PIDN:AAA20180.1; PID:g293117
C;Superfamily: prolactin

  Query Match 50.8%; Score 405; DB 2; Length 217;
  Best Local Similarity 67.7%; Pred. No. 2.4e-32;
  Matches 86; Conservative 9; Mismatches 18; Indels 14; Gaps 2;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||| ||: |: ||| ||:|||||| :||||||||||||||:|||||| |||||||
Db         27 FPTIPLSWLFNTAVFRAHHLHKLAFDTYPKFEEAYIPKEQKYSFLRNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEA-------LY 114
              |||:|||||||||||| ||||||||||||          : :  :|||          ||
Db         87 PSNKEETQQKSNLELLHISLLLIQSWLEPVQF-------LRSVFANHLVHTNSNFDIYLY 139

Qy        115 LVCGERG 121
              |   | |
Db        140 LKKLEEG 146
```

RESULT 7

I67408
chorionic somatomammotropin-2 - rhesus macaque (fragment)
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 31-May-1996 #sequence_revision 31-May-1996 #text_change 16-Jul-1999
C;Accession: I67408
R;Golos, T.G.; Durning, M.; Fisher, J.M.; Fowler, P.D.
Endocrinology 133, 1744-1752, 1993
A;Title: Cloning of four growth hormone/chorionic somatomammotropin-related complementary deoxyribonucleic acids differentially expressed during pregnancy in the rhesus monkey placenta.
A;Reference number: I53267; MUID:94008724; PMID:8404617
A;Accession: I67408
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-212 <RES>
A;Cross-references: GB:L16553; NID:g293110; PIDN:AAA18840.1; PID:g293111
C;Superfamily: prolactin

  Query Match 49.7%; Score 396; DB 2; Length 212;
  Best Local Similarity 82.2%; Pred. No. 1.8e-31;
  Matches 74; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

```
Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||:||::||||||||||||||||||||||||:|:| ::||| |  |::|||||
Db         23 PSVPLSRLFDHAMIQAHRLHQLAFDTYQEFEEAYIPKEKKHSLMENPQASFCFADSIPTP 82

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              || |||||||||||||||||||||||||||
Db         83 SNLEETQQKSNLELLRISLLLIQSWLEPVQ 112
```

RESULT 8
I53267
chorionic somatomammotropin-1 - rhesus macaque
C;Species: Macaca mulatta (rhesus macaque)
C;Date: 31-May-1996 #sequence_revision 31-May-1996 #text_change 16-Jul-1999
C;Accession: I53267
R;Golos, T.G.; Durning, M.; Fisher, J.M.; Fowler, P.D.
Endocrinology 133, 1744-1752, 1993
A;Title: Cloning of four growth hormone/chorionic somatomammotropin-related complementary deoxyribonucleic acids differentially expressed during pregnancy in the rhesus monkey placenta.
A;Reference number: I53267; MUID:94008724; PMID:8404617
A;Accession: I53267
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-217 <RES>
A;Cross-references: GB:L16552; NID:g293108; PIDN:AAA18839.1; PID:g293109
C;Superfamily: prolactin

  Query Match 49.7%; Score 396; DB 2; Length 217;
  Best Local Similarity 82.2%; Pred. No. 1.8e-31;
  Matches 74; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

```
Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||:||::||||||||||||||||||||||||:|:| ::||| |  |::|||||
Db         28 PSVPLSRLFDHAMIQAHRLHQLAFDTYQEFEEAYIPKEKKHSLMENPQASFCFADSIPTP 87
```

```
Qy          63 SNREETQQKSNLELLRISLLLIQSWLEPVQ 92
               || |||||||||||||||||||||||||||||
Db          88 SNLEETQQKSNLELLRISLLLIQSWLEPVQ 117
```

RESULT 9
LCHUC
choriomammotropin A precursor [validated] - human
N;Alternate names: chorionic somatomammotropin 1; placental lactogen
C;Species: Homo sapiens (man)
C;Date: 23-Oct-1981 #sequence_revision 23-Oct-1981 #text_change 08-Dec-2000
C;Accession: C32435; A94422; I52342; A93833; A93192; A90054; A94427; A61283; I55229; I59658; A01512
R;Chen, E.Y.; Liao, Y.C.; Smith, D.H.; Barrera-Saldana, H.A.; Gelinas, R.E.; Seeburg, P.H.
Genomics 4, 479-497, 1989
A;Title: The human growth hormone locus: nucleotide sequence, biology, and evolution.
A;Reference number: A32435; MUID:89307277; PMID:2744760
A;Accession: C32435
A;Molecule type: DNA
A;Residues: 1-217 <CHE>
A;Cross-references: GB:J03071; NID:g183148; PIDN:AAA52551.1; PID:g183151
R;Goodman, H.M.; DeNoto, F.; Fiddes, J.C.; Hallewell, R.A.; Page, G.S.; Smith, S.; Tischer, E.
in Mobilization and Reassembly of Genetic Information, Scott, W.A., Werner, R., Joseph, D.R., and Schultz, J., eds., pp.155-179, Academic Press, New York, 1980
A;Reference number: A94422
A;Accession: A94422
A;Molecule type: mRNA
A;Residues: 1-217 <GOO>
R;Tanaka, M.; Masuda, N.; Watahiki, M.; Yamakawa, M.; Shimizu, K.; Nagai, J.; Nakashima, K.
Biochem. Int. 16, 287-292, 1988
A;Title: cDNA cloning of human chorionic somatomammotropin-1 mRNA whose transcription was initiated at the 5' region of the TATA box.
A;Reference number: I52342; MUID:88209096; PMID:2835050
A;Accession: I52342
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-3 <TAN>
A;Cross-references: GB:M35419; NID:g506822
R;Sherwood, L.M.; Burstein, Y.; Schechter, I.
Proc. Natl. Acad. Sci. U.S.A. 76, 3819-3823, 1979
A;Title: Primary structure of the NH-2-terminal extra piece of the precursor to human placental lactogen.
A;Reference number: A93833; MUID:80034970; PMID:291043
A;Accession: A93833
A;Molecule type: protein
A;Residues: 1,3-26 <SHE>
A;Experimental source: placenta
R;Shine, J.; Seeburg, P.H.; Martial, J.A.; Baxter, J.D.; Goodman, H.M.
Nature 270, 494-499, 1977
A;Title: Construction and analysis of recombinant DNA for human chorionic somatomammotropin.
A;Reference number: A93192; MUID:78071761; PMID:593368

A;Accession: A93192
A;Molecule type: DNA
A;Residues: 50-217 <SHI>
A;Experimental source: placenta
R;Li, C.H.; Dixon, J.S.; Chung, D.
Arch. Biochem. Biophys. 155, 95-110, 1973
A;Title: Amino acid sequence of human chorionic somatomammotropin.
A;Reference number: A90054; MUID:73201971; PMID:4712450
A;Accession: A90054
A;Molecule type: protein
A;Residues: 27-217 <LIC>
A;Experimental source: placenta
R;Niall, H.D.
in Prolactin and Carcinogenesis, Proc. Fourth Tenovus Workshop Prolactin,
Griffiths, K., ed., pp.13-20, Alpha Omega Alpha Press, Cardiff, Wales, 1972
A;Title: The chemistry of the human lactogenic hormones.
A;Reference number: A94427
A;Accession: A94427
A;Molecule type: protein
A;Residues: 27-217 <NIA>
A;Experimental source: placenta
R;Nic A Bhaird, N.; Tipton, K.F.
Biochem. Soc. Trans. 19, 20S, 1991
A;Title: Catechol-O-methyltransferase from human placenta: purification and some
properties.
A;Reference number: A61283; MUID:91244006; PMID:2037148
A;Accession: A61283
A;Molecule type: protein
A;Residues: 27-46 <NIC>
A;Note: choriomammotropin apparently copurified with placental catechol-O-
methyltransferase
R;Sherwood, L.M.; Handwerger, S.; McLaurin, W.D.; Lanner, M.
Nature New Biol. 233, 59-61, 1971
A;Title: Amino-acid sequence of human placental lactogen.
A;Reference number: A93401; MUID:72016313; PMID:5286363
A;Contents: annotation
R;Sherwood, L.M.; Handwerger, S.; McLaurin, W.D.; Lanner, M.
Nature New Biol. 235, 64, 1972
A;Reference number: A93405
A;Contents: annotation
R;Schneider, A.B.; Kowalski, K.; Russell, J.; Sherwood, L.M.
J. Biol. Chem. 254, 3782-3787, 1979
A;Title: Identification of the interchain disulfide bonds of dimeric human
placental lactogen.
A;Reference number: A92251; MUID:79173081; PMID:438159
A;Contents: annotation; dimeric disulfide bonds
R;Selby, M.J.; Barta, A.; Baxter, J.D.; Bell, G.I.; Eberhardt, N.L.
J. Biol. Chem. 259, 13131-13138, 1984
A;Title: Analysis of a major human chorionic somatomammotropin gene. Evidence
for two functional promoter elements.
A;Reference number: I55229; MUID:85030426; PMID:6208192
A;Accession: I55229
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-217 <RES>
A;Cross-references: GB:K02401; NID:g181120; PIDN:AAA52115.1; PID:g181121
R;Seeburg, P.H.; Shine, J.; Martial, J.A.; Ullrich, A.; Goodman, H.

Trans. Assoc. Am. Physicians 90, 109-116, 1977
A;Title: Nucleotide sequence of a human gene coding for a polypeptide hormone.
A;Reference number: I59658; MUID:78160787; PMID:611657
A;Accession: I59658
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 160-217 <RE2>
A;Cross-references: GB:M25118; NID:g181124; PIDN:AAA35721.1; PID:g181125
C;Genetics:
A;Gene: GDB:CSH1
A;Cross-references: GDB:119084; OMIM:150200
A;Map position: 17q22-17q24
A;Introns: 4/1; 57/3; 97/3; 152/3
C;Superfamily: prolactin
C;Keywords: hormone; placenta
F;1-26/Domain: signal sequence #status experimental <SIG>
F;27-217/Product: choriomammotropin A #status experimental <MAT>
F;79-191/Disulfide bonds: #status experimental
F;208-215/Disulfide bonds: (in monomeric form) #status experimental
F;208/Disulfide bonds: interchain (to 215 in dimeric form) #status experimental
F;215/Disulfide bonds: interchain (to 208 in dimeric form) #status experimental

  Query Match 47.8%; Score 381; DB 1; Length 217;
  Best Local Similarity 82.0%; Pred. No. 5.5e-30;
  Matches 73; Conservative 8; Mismatches 8; Indels 0; Gaps 0;

```
Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:|||||||:|||:||| |||| |||||||| ||||:|||||| : |||  ||:||||||
Db         29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEETYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | ||||||||||||||||||:|||||||:
Db         89 NMEETQQKSNLELLRISLLLIESWLEPVR 117
```

RESULT 10
E32435
choriomammotropin B precursor - human
N;Alternate names: chorionic somatomammotropin 2
C;Species: Homo sapiens (man)
C;Date: 29-Dec-1989 #sequence_revision 29-Dec-1989 #text_change 16-Jul-1999
C;Accession: E32435
R;Chen, E.Y.; Liao, Y.C.; Smith, D.H.; Barrera-Saldana, H.A.; Gelinas, R.E.; Seeburg, P.H.
Genomics 4, 479-497, 1989
A;Title: The human growth hormone locus: nucleotide sequence, biology, and evolution.
A;Reference number: A32435; MUID:89307277; PMID:2744760
A;Accession: E32435
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-217 <CHE>
A;Cross-references: GB:J03071; NID:g183148; PIDN:AAA52553.1; PID:g183153
C;Genetics:
A;Gene: GDB:CSH2
A;Cross-references: GDB:119813; OMIM:118820
A;Map position: 17q22-17q24

C;Superfamily: prolactin

  Query Match 47.8%; Score 381; DB 2; Length 217;
  Best Local Similarity 82.0%; Pred. No. 5.5e-30;
  Matches 73; Conservative 8; Mismatches 8; Indels 0; Gaps 0;

```
Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:|||||||:|||:||| |||| |||||||| ||||:|||||| : |||  ||:|||||||
Db         29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEETYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | ||||||||||||||||||||:|||||||:
Db         89 NMEETQQKSNLELLRISLLLIESWLEPVR 117
```

RESULT 11
A26449
choriomammotropin precursor (allele hCS-3) - human
C;Species: Homo sapiens (man)
C;Date: 30-Jun-1988 #sequence_revision 30-Jun-1988 #text_change 28-Jul-1995
C;Accession: A26449
R;Hirt, H.; Kimelman, J.; Birnbaum, M.J.; Chen, E.Y.; Seeburg, P.H.; Eberhardt, N.L.; Barta, A.
DNA 6, 59-70, 1987
A;Title: The human growth hormone gene locus: structure, evolution, and allelic variations.
A;Reference number: A26449; MUID:87161235; PMID:3030680
A;Accession: A26449
A;Molecule type: DNA
A;Residues: 1-215 <HIR>
C;Superfamily: prolactin
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-215/Product: choriomammotropin, hCS-3 allele #status predicted <MAT>

  Query Match 45.1%; Score 359.5; DB 2; Length 215;
  Best Local Similarity 80.5%; Pred. No. 7e-28;
  Matches 70; Conservative 8; Mismatches 8; Indels 1; Gaps 1;

```
Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:|||||||:|||:||| |||| |||||||| ||||:|||||| : |||  ||:|||||||
Db         29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEETYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEP 90
              | |||||||||||||: ||||:|||||
Db         89 NMEETQQKSNLELLRL-LLLIESWLEP 114
```

RESULT 12
B49159
somatotropin - golden hamster
N;Alternate names: growth hormone
C;Species: Mesocricetus auratus (golden hamster)
C;Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 21-Jul-2000
C;Accession: B49159
R;Southard, J.N.; Sanchez-Jimenez, F.; Campbell, G.T.; Talamantes, F.
Endocrinology 129, 2965-2971, 1991

A;Title: Sequence and expression of hamster prolactin and growth hormone messenger RNAs.
A;Reference number: A49159; MUID:92063850; PMID:1954881
A;Accession: B49159
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-216 <SOU>
A;Cross-references: GB:S66299; NID:g239355; PIDN:AAB20368.1; PID:g239356
A;Note: sequence extracted from NCBI backbone (NCBIN:66299, NCBIP:66300)
C;Superfamily: prolactin

  Query Match 39.0%; Score 310.5; DB 2; Length 216;
  Best Local Similarity 67.0%; Pred. No. 4.6e-23;
  Matches 61; Conservative 13; Mismatches 16; Indels 1; Gaps 1;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||||| |||:||| |||| |:|| :|| ||:  |||:||
Db         27 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQTAFCFSETIPA 85

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |: :|| ||:|::|||| ||||||||| |||
Db         86 PTGKEEAQQRSDMELLRFSLLLIQSWLGPVQ 116
```

RESULT 13
PN0140
somatotropin - sei whale
N;Alternate names: growth hormone
C;Species: Balaenoptera borealis (sei whale)
C;Date: 07-May-1993 #sequence_revision 07-May-1993 #text_change 07-May-1999
C;Accession: PN0140
R;Yudaev, N.A.; Pankov, Y.A.; Bulatov, A.A.; Osipova, T.A.
Biokhimiia 47, 1059-1069, 1982
A;Title: Amino acid sequence of seiwhale somatotropin.
A;Reference number: PN0140; MUID:83000569; PMID:7115813
A;Accession: PN0140
A;Molecule type: protein
A;Residues: 1-190 <YUD>
A;Note: article in Russian with English abstract
C;Superfamily: prolactin
C;Keywords: growth factor; hormone
F;52-163,180-188/Disulfide bonds: #status predicted

  Query Match 38.6%; Score 307.5; DB 2; Length 190;
  Best Local Similarity 67.0%; Pred. No. 7.8e-23;
  Matches 61; Conservative 14; Mismatches 15; Indels 1; Gaps 1;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||:|| |||:||| |||| |:| |||| |::  ||| |||
Db          1 FPAMPLSSLFANAVLRAQHLHELAADTYKEFERAYIPEGQRY-FLQNAQSTGCFSEVIPT 59

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |:|::| ||:|::|||| ||||||||| |||
Db         60 PANKDEAQQRSDVELLRFSLLLIQSWLGPVQ 90
```

RESULT 14

STHO
somatotropin - horse
N;Alternate names: growth hormone
C;Species: Equus caballus (domestic horse)
C;Date: 13-Jul-1981 #sequence_revision 13-Jul-1981 #text_change 23-Aug-1996
C;Accession: A91772; A91395; A91383; A90240; A01514
R;Zakin, M.M.; Poskus, E.; Langton, A.A.; Ferrara, P.; Santome, J.A.; Dellacha, J.M.; Paladini, A.C.
Int. J. Pept. Protein Res. 8, 435-444, 1976
A;Title: Primary structure of equine growth hormone.
A;Reference number: A91772; MUID:77005410; PMID:965151
A;Accession: A91772
A;Molecule type: protein
A;Residues: 1-190 <ZAK>
R;Zakin, M.M.; Poskus, E.; Dellacha, J.M.; Paladini, A.C.; Santome, J.A.
FEBS Lett. 34, 353-355, 1973
A;Title: The amino acid sequence of equine growth hormone.
A;Reference number: A91395; MUID:74020362; PMID:4747849
A;Accession: A91395
A;Molecule type: protein
A;Residues: 1-190 <ZA2>
R;Zakin, M.M.; Poskus, E.; Dellacha, J.M.; Paladini, A.C.; Santome, J.A.
FEBS Lett. 25, 77-82, 1972
A;Title: Amino acid sequences around the cystine residues in equine growth hormone.
A;Reference number: A91383
A;Accession: A91383
A;Molecule type: protein
A;Residues: 42-69;157-190 <ZA3>
R;Oliver, L.; Hartree, A.S.
Biochem. J. 109, 19-24, 1968
A;Title: Amino acid sequences around the cystine residues in horse growth hormone.
A;Reference number: A90240; MUID:68368390; PMID:4876100
A;Accession: A90240
A;Molecule type: protein
A;Residues: 176-190 <OLI>
C;Superfamily: prolactin
C;Keywords: hormone; pituitary
F;52-163,180-188/Disulfide bonds: #status experimental

  Query Match 38.5%; Score 306.5; DB 1; Length 190;
  Best Local Similarity 65.2%; Pred. No. 9.8e-23;
  Matches 60; Conservative 14; Mismatches 17; Indels 1; Gaps 1;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db          1 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 59

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL 93
              |: ::| ||:|::|||| |||||||||| ||||
Db         60 PTGKDEAQQRSDMELLRFSLLLIQSWLGPVQL 91
```

RESULT 15
STMS
somatotropin precursor - mouse

N;Alternate names: growth hormone
C;Species: Mus musculus (house mouse)
C;Date: 30-Sep-1987 #sequence_revision 30-Sep-1987 #text_change 28-May-1999
C;Accession: B23911
R;Linzer, D.I.H.; Talamantes, F.
J. Biol. Chem. 260, 9574-9579, 1985
A;Title: Nucleotide sequence of mouse prolactin and growth hormone mRNAs and expression of these mRNAs during pregnancy.
A;Reference number: A92548; MUID:85261358; PMID:2991252
A;Accession: B23911
A;Molecule type: mRNA
A;Residues: 1-216 <LIN>
A;Cross-references: GB:X02891; GB:K03232; NID:g51067; PIDN:CAA26650.1; PID:g51068
C;Superfamily: prolactin
C;Keywords: anterior pituitary; growth factor; hormone
F;1-26/Domain: signal sequence #status predicted <SIG>
F;27-216/Product: somatotropin #status predicted <STN>
F;78-189,206-214/Disulfide bonds: #status predicted

  Query Match 38.2%; Score 304.5; DB 1; Length 216;
  Best Local Similarity 64.8%; Pred. No. 1.8e-22;
  Matches 59; Conservative 14; Mismatches 17; Indels 1; Gaps 1;

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| |||||  |||:||| ||||: |:|| :|| | :  |||:||
Db         27 FPAMPLSSLFSNAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 85

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |: :|| ||:::::|||| ||||||||| |||
Db         86 PTGKEEAQQRTDMELLRFSLLLIQSWLGPVQ 116
```

Search completed: July 15, 2004, 16:37:34
Job time : 17.9577 secs

GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 15, 2004, 16:29:50 ; Search time 51.2127 Seconds
(without alignments)
924.141 Million cell updates/sec

Title: US-09-423-100-7
Perfect score: 797
Sequence: 1 MFPTIPLSRLFDNAMLRAHR.....IVEQCCTSICSLYQLENYCN 150

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1017041 seqs, 315518202 residues

Total number of hits satisfying chosen parameters: 1017041

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SPTREMBL_25:*
1: sp_archea:*
2: sp_bacteria:*
3: sp_fungi:*
4: sp_human:*
5: sp_invertebrate:*
6: sp_mammal:*
7: sp_mhc:*
8: sp_organelle:*
9: sp_phage:*
10: sp_plant:*
11: sp_rodent:*
12: sp_virus:*
13: sp_vertebrate:*
14: sp_unclassified:*
15: sp_rvirus:*
16: sp_bacteriap:*
17: sp_archeap:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description

1	436	54.7	217	6	Q8WNE0	Q8wne0 ateles geof
2	427.5	53.6	245	4	O14644	O14644 homo sapien
3	407.5	51.1	217	6	Q07369	Q07369 macaca mula
4	399	50.1	184	6	Q866T9	Q866t9 pan troglod
5	397	49.8	217	6	Q866U1	Q866u1 pan troglod
6	396	49.7	212	6	Q07368	Q07368 macaca mula
7	396	49.7	217	6	Q07367	Q07367 macaca mula
8	385	48.3	217	6	Q866T8	Q866t8 pan troglod
9	381	47.8	217	4	Q14407	Q14407 homo sapien
10	370	46.4	217	6	Q866U0	Q866u0 pan troglod
11	348	43.7	217	6	Q8WND9	Q8wnd9 ateles geof
12	341	42.8	202	4	O14643	O14643 homo sapien
13	322.5	40.5	217	6	Q8MI74	Q8mi74 callithrix
14	306.5	38.5	216	11	O70615	O70615 spalax leuc
15	301.5	37.8	216	6	Q8MI73	Q8mi73 delphinus d
16	301.5	37.8	216	6	Q8HYE5	Q8hye5 ailuropoda
17	301.5	37.8	216	6	Q7YQB8	Q7yqb8 hippopotamu
18	298.5	37.5	216	11	Q9R2C3	Q9r2c3 mus musculu
19	297.5	37.3	204	6	Q95205	Q95205 ovis aries
20	297.5	37.3	216	6	Q7YRR6	Q7yrr6 camelus dro
21	297.5	37.3	216	11	Q9JKM4	Q9jkm4 cavia porce
22	297	37.3	217	6	Q8MI75	Q8mi75 callithrix
23	290.5	36.4	192	6	Q9TU21	Q9tu21 capra hircu
24	289.5	36.3	192	6	Q9TQW9	Q9tqw9 bos indicus
25	289.5	36.3	217	6	Q7YQD2	Q7yqd2 giraffa cam
26	287.5	36.1	190	11	Q9JKG0	Q9jkg0 cavia porce
27	286.5	35.9	178	6	Q95MJ5	Q95mj5 tarsius ban
28	286.5	35.9	217	6	Q864S7	Q864s7 bos mutus g
29	285.5	35.8	217	6	Q9BEC0	Q9bec0 tragulus ja
30	285.5	35.8	217	6	Q9BEB9	Q9beb9 tragulus ja
31	285	35.8	167	4	P78451	P78451 homo sapien
32	283.5	35.6	178	6	Q95MJ6	Q95mj6 tarsius syr
33	280.5	35.2	217	6	Q28957	Q28957 sus scrofa
34	271.5	34.1	110	6	Q8HXV2	Q8hxv2 pongo pygma
35	265.5	33.3	143	6	Q95240	Q95240 canis famil
36	261.5	32.8	218	13	Q9PU72	Q9pu72 cynops pyrr
37	261	32.7	216	13	Q804M1	Q804m1 anser anser
38	254	31.9	110	6	Q8WNW6	Q8wnw6 felis silve
39	246.5	30.9	145	6	Q9BDR4	Q9bdr4 galago cras
40	239.5	30.1	215	13	Q7ZU47	Q7zu47 rana catesb
41	234	29.4	199	4	Q14406	Q14406 homo sapien
42	233.5	29.3	195	13	Q91386	Q91386 amia calva
43	229.5	28.8	217	13	Q7T1C3	Q7t1c3 ambystoma b
44	224.5	28.2	106	13	Q9I8Q7	Q9i8q7 rana pipien
45	201.5	25.3	110	13	Q98TA8	Q98ta8 pantodon bu

ALIGNMENTS

```
RESULT 1
Q8WNE0
ID   Q8WNE0       PRELIMINARY;      PRT;   217 AA.
AC   Q8WNE0;
DT   01-MAR-2002 (TrEMBLrel. 20, Created)
DT   01-MAR-2002 (TrEMBLrel. 20, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
```

```
DE   Growth hormone.
GN   GH-N.
OS   Ateles geoffroyi (Black-handed spider monkey).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Atelinae; Ateles.
OX   NCBI_TaxID=9509;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D., Santiago D., Barrera-Saldana H.;
RT   "Independent duplication of the growth hormone gene in three
RT   Anthropoidean lineages.";
RL   Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF374234; AAL72286.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  24894 MW;  425829FF41EEAAE6 CRC64;

  Query Match             54.7%;  Score 436;  DB 6;  Length 217;
  Best Local Similarity   66.9%;  Pred. No. 9.5e-39;
  Matches   97;  Conservative    8;  Mismatches   24;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||| ||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLLDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCG----------SHLVE 111
              |::::|||||||||||||||||||| ||||      | |  | |            | |
Db         87 PASKKETQQKSNLELLRISLLLIQSWFEPVQF-LRSVFANSLLYGVSDSDVYEYLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
                :  : |  | |   :|:|  |  |
Db        146 GIQTLMGRLEDG---SPQTGEIFRQ 167


RESULT 2
O14644
ID   O14644      PRELIMINARY;      PRT;   245 AA.
AC   O14644;
DT   01-JAN-1998 (TrEMBLrel. 05, Created)
DT   01-JAN-1998 (TrEMBLrel. 05, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Placental growth hormone isoform hGH-V3 precursor.
GN   HGH-V.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Term placenta;
RX   MEDLINE=98373737; PubMed=9709963;
RA   Boguszewski C.L., Svensson P.A., Jansson T., Clark R.,
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RA   Carlsson L.M.S., Carlsson B.;
RT   "Cloning of two novel growth hormone transcripts expressed in human
RT   placenta.";
RL   J. Clin. Endocrinol. Metab. 83:2878-2885(1998).
DR   EMBL; AF006061; AAB71829.1; -.
DR   HSSP; P01241; 1A22.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
KW   Signal.
FT   SIGNAL        1     26       POTENTIAL.
SQ   SEQUENCE   245 AA;  27101 MW;  14CC7F8CD75D91C8 CRC64;

  Query Match             53.6%;  Score 427.5;  DB 4;  Length 245;
  Best Local Similarity   71.9%;  Pred. No. 9.1e-38;
  Matches   92;  Conservative    6;  Mismatches   17;  Indels   13;  Gaps    2;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||| ||:|||:|||||||||| |||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRARRLYQLAYDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL----------GTGPRFVNQHLCGSHLV 110
              |||| :|||||||||||||||||||||||||          |     | :||    |
Db         87 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL--KDLE 144

Qy        111 EALYLVCG 118
              | :  : |
Db        145 EGIQTLIG 152


RESULT 3
Q07369
ID   Q07369      PRELIMINARY;      PRT;   217 AA.
AC   Q07369;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Chorionic somatomammotropin-3.
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Midpregnancy placenta;
RX   MEDLINE=94008724; PubMed=8404617;
RA   Golos T.G., Durning M., Fisher J.M., Fowler P.D.;
RT   "Cloning of four growth hormone/chorionic somatomammotropin-related
RT   complementary deoxyribonucleic acids differentially expressed during
RT   pregnancy in the rhesus monkey placenta.";
RL   Endocrinology 133:1744-1752(1993).
DR   EMBL; L16554; AAA18841.1; -.
DR   PIR; I67409; I67409.
```

```
DR   HSSP; P01241; 1AXI.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  24874 MW;  F1EB6AFDBBA1B185 CRC64;

  Query Match             51.1%;  Score 407.5;  DB 6;  Length 217;
  Best Local Similarity   71.9%;  Pred. No. 1.1e-35;
  Matches   82;  Conservative   12;  Mismatches   19;  Indels    1;  Gaps    1;

Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||| |::|||||||||||||||||: |||||:|:| : ||| |  |||||||
Db         28 PSVPLSRLFDNIMMQAHRLHQLAFDTYQEFEKTYIPKEKKHSLMGNPQASFCFSESIPTP 87

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEALYLV 116
              |||||||||||||||||||||||||||||  |  | |  : |:   :|  |:
Db         88 SNREETQQKSNLELLRISLLLIQSWLEPVQL-LGSVFANNLVYGTSESDAYDLL 140


RESULT 4
Q866T9
ID   Q866T9      PRELIMINARY;      PRT;   184 AA.
AC   Q866T9;
DT   01-JUN-2003 (TrEMBLrel. 24, Created)
DT   01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Placental lactogen PL-C (Fragment).
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D.E., Barrera H.S.;
RT   "The GH-PL locus a hot-point between human and chimpanzee genomes.";
RL   Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY146627; AAN84507.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
FT   NON_TER     184     184
SQ   SEQUENCE   184 AA;  21145 MW;  68D1FF4AE59178DD CRC64;

  Query Match             50.1%;  Score 399;  DB 6;  Length 184;
  Best Local Similarity   84.6%;  Pred. No. 7.5e-35;
  Matches   77;  Conservative    7;  Mismatches    7;  Indels    0;  Gaps    0;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||:|||:||| |||| |||||||||||||:|||||| : |||  ||:||||
Db         27 FPTIPLSRLFDHAMLQAHRAHQLAIDTYQEFEEAYIPKDQKYSFLHDSQTSFCFSDSIPT 86
```

```
Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
               ||| |||||||||||||||||:||||||:
Db          87 PSNMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 5
Q866U1
ID   Q866U1      PRELIMINARY;      PRT;   217 AA.
AC   Q866U1;
DT   01-JUN-2003 (TrEMBLrel. 24, Created)
DT   01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Placental lactogen PL-A.
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D.E., Barrera H.S.;
RT   "The GH-PL locus a hot-point between human and chimpanzee genomes.";
RL   Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY146625; AAN84505.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  25081 MW;  C74B6262D8A93060 CRC64;

  Query Match           49.8%;  Score 397;  DB 6;  Length 217;
  Best Local Similarity  87.6%;  Pred. No. 1.5e-34;
  Matches   78;  Conservative    6;  Mismatches    5;  Indels    0;  Gaps    0;

Qy           4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
               |:||||||:|||:||| :||| |||||||||| |||||||||||||| |||||||||
Db          29 TVPLSRLFDHAMLQAHRAYQLAIDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPTPS 88

Qy          64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
               | |||||||||||||||||:||||||:
Db          89 NMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 6
Q07368
ID   Q07368      PRELIMINARY;      PRT;   212 AA.
AC   Q07368;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Somatotropin 2 precursor (Growth hormone 2) (Fragment).
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
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OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Placenta;
RX   MEDLINE=94008724; PubMed=8404617;
RA   Golos T.G., Durning M., Fisher J.M., Fowler P.D.;
RT   "Cloning of four growth hormone/chorionic somatomammotropin-related
RT   complementary deoxyribonucleic acids differentially expressed during
RT   pregnancy in the rhesus monkey placenta.";
RL   Endocrinology 133:1744-1752(1993).
DR   EMBL; L16553; AAA18840.1; -.
DR   PIR; I67408; I67408.
DR   HSSP; P01241; 1AXI.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
FT   NON_TER       1      1
SQ   SEQUENCE   212 AA;  24525 MW;  27BC91106256E6F5 CRC64;

  Query Match             49.7%;  Score 396;  DB 6;  Length 212;
  Best Local Similarity   82.2%;  Pred. No. 1.9e-34;
  Matches   74;  Conservative   11;  Mismatches    5;  Indels    0;  Gaps    0;

Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||:||::||||||||||||||||||||||:|:| ::||| |  |::|||||
Db         23 PSVPLSRLFDHAMIQAHRLHQLAFDTYQEFEEAYIPKEKKHSLMENPQASFCFADSIPTP 82

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              || |||||||||||||||||||||||||||
Db         83 SNLEETQQKSNLELLRISLLLIQSWLEPVQ 112


RESULT 7
Q07367
ID   Q07367      PRELIMINARY;      PRT;   217 AA.
AC   Q07367;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Chorionic somatomammotropin-1.
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Midpregnancy placenta;
RX   MEDLINE=94008724; PubMed=8404617;
RA   Golos T.G., Durning M., Fisher J.M., Fowler P.D.;
RT   "Cloning of four growth hormone/chorionic somatomammotropin-related
RT   complementary deoxyribonucleic acids differentially expressed during
RT   pregnancy in the rhesus monkey placenta.";
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RL   Endocrinology 133:1744-1752(1993).
DR   EMBL; L16552; AAA18839.1; -.
DR   PIR; I53267; I53267.
DR   HSSP; P01241; 1AXI.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  24942 MW;  FF5AA8915131F2BC CRC64;

  Query Match             49.7%;  Score 396;  DB 6;  Length 217;
  Best Local Similarity   82.2%;  Pred. No. 1.9e-34;
  Matches   74;  Conservative   11;  Mismatches    5;  Indels    0;  Gaps    0;

Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              |::|||||||:||::||||||||||||||||||||||:|:| ::||| |  |::|||||
Db         28 PSVPLSRLFDHAMIQAHRLHQLAFDTYQEFEEAYIPKEKKHSLMENPQASFCFADSIPTP 87

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              || |||||||||||||||||||||||||||
Db         88 SNLEETQQKSNLELLRISLLLIQSWLEPVQ 117


RESULT 8
Q866T8
ID   Q866T8      PRELIMINARY;      PRT;   217 AA.
AC   Q866T8;
DT   01-JUN-2003 (TrEMBLrel. 24, Created)
DT   01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Placental lactogen PL-D.
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D.E., Barrera H.S.;
RT   "The GH-PL locus a hot-point between human and chimpanzee genomes.";
RL   Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY146628; AAN84508.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  25135 MW;  1EB7B89B8A12E4F4 CRC64;

  Query Match             48.3%;  Score 385;  DB 6;  Length 217;
  Best Local Similarity   83.1%;  Pred. No. 2.9e-33;
  Matches   74;  Conservative    8;  Mismatches    7;  Indels    0;  Gaps    0;

Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
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                |:|||||||:|||:||| |||| ||||||||||||:|||||| : |||  ||:|||||||
Db          29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEEAYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy          64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
                | ||||||||||||||||||:||||||:
Db          89 NMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 9
Q14407
ID   Q14407      PRELIMINARY;      PRT;   217 AA.
AC   Q14407;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Chorionic somatomammotropin CS-2 (Chorionic somatomammotropin hormone
DE   2).
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89307277; PubMed=2744760;
RA   Chen E.Y., Liao Y.C., Smith D.H., Barrera-Saldana H.A., Gelinas R.E.,
RA   Seeburg P.H.;
RT   "The human growth hormone locus: nucleotide sequence, biology, and
RT   evolution.";
RL   Genomics 4:479-497(1989).
RN   [2]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=91102558; PubMed=1980158;
RA   Vnencak-Jones C.L., Phillips J.A. III.;
RT   "Hot spots for growth hormone gene deletions in homologous regions
RT   outside of Alu repeats.";
RL   Science 250:1745-1748(1990).
RN   [3]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Placenta;
RA   Strausberg R.;
RL   Submitted (JUL-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; J03071; AAA52553.1; -.
DR   EMBL; BC022044; AAH22044.1; -.
DR   EMBL; BC035965; AAH35965.1; -.
DR   PIR; E32435; E32435.
DR   HSSP; P01241; 1A22.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  24994 MW;  39FAACDDB6B2E951 CRC64;

  Query Match             47.8%;  Score 381;  DB 4;  Length 217;
  Best Local Similarity   82.0%;  Pred. No. 7.9e-33;
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  Matches   73;  Conservative    8;  Mismatches    8;  Indels    0;  Gaps    0;

Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:|||||||:|||:||| |||| |||||||| ||||:|||||| : |||  ||:|||||||
Db         29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEETYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | ||||||||||||||||||||:||||||:
Db         89 NMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 10
Q866U0
ID   Q866U0      PRELIMINARY;      PRT;   217 AA.
AC   Q866U0;
DT   01-JUN-2003 (TrEMBLrel. 24, Created)
DT   01-JUN-2003 (TrEMBLrel. 24, Last sequence update)
DT   01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE   Placental lactogen PL-B.
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D.E., Barrera H.S.;
RT   "The GH-PL locus a hot-point between human and chimpanzee genomes.";
RL   Submitted (AUG-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AY146626; AAN84506.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  24884 MW;  A1663257499827D4 CRC64;

  Query Match             46.4%;  Score 370;  DB 6;  Length 217;
  Best Local Similarity   80.9%;  Pred. No. 1.2e-31;
  Matches   72;  Conservative    7;  Mismatches   10;  Indels    0;  Gaps    0;

Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:||||||  |||:||  |||| ||||||||||||:|||||| : |||  ||:|||||||
Db         29 TVPLSRLFKEAMLQAHPAHQLAIDTYQEFEEAYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | ||||||||||||||||||||:||||||:
Db         89 NMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 11
Q8WND9
ID   Q8WND9      PRELIMINARY;      PRT;   217 AA.
AC   Q8WND9;
DT   01-MAR-2002 (TrEMBLrel. 20, Created)
DT   01-MAR-2002 (TrEMBLrel. 20, Last sequence update)
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DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Growth hormone.
GN   GH-V.
OS   Ateles geoffroyi (Black-handed spider monkey).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Atelinae; Ateles.
OX   NCBI_TaxID=9509;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D., Santiago D., Barrera-Saldana H.;
RT   "Independent duplication of the growth hormone gene in three
RT   Anthropoidean lineages.";
RL   Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AF374235; AAL72287.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
SQ   SEQUENCE   217 AA;  25293 MW;  741745A1B75C053E CRC64;

  Query Match             43.7%;  Score 348;  DB 6;  Length 217;
  Best Local Similarity   75.8%;  Pred. No. 2.8e-29;
  Matches   69;  Conservative    8;  Mismatches   14;  Indels    0;  Gaps    0;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || ||||||| :||||||:|||:||||||| ||  |||:||| ||:||:  | |||||||
Db         27 FPRIPLSRLFGDAMLRAHQLHQVAFDTYQELEENCIPKKQKYFFLRNPKNFLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | |:||   ||:|||| ||||||||||||||
Db         87 PFNKEEVLAKSSLELLHISLLLIQSWLEPVQ 117


RESULT 12
O14643
ID   O14643      PRELIMINARY;      PRT;   202 AA.
AC   O14643;
DT   01-JAN-1998 (TrEMBLrel. 05, Created)
DT   01-JAN-1998 (TrEMBLrel. 05, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Placental growth hormone 20kDa isoform precursor.
GN   HGH-V.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Term placenta;
RX   MEDLINE=98373737; PubMed=9709963;
RA   Boguszewski C.L., Svensson P.A., Jansson T., Clark R.,
RA   Carlsson L.M.S., Carlsson B.;
RT   "Cloning of two novel growth hormone transcripts expressed in human
RT   placenta.";
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RL   J. Clin. Endocrinol. Metab. 83:2878-2885(1998).
DR   EMBL; AF006060; AAB71828.1; -.
DR   HSSP; P01241; 1A22.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Signal.
FT   SIGNAL        1     26       POTENTIAL.
SQ   SEQUENCE   202 AA;  23128 MW;  38B64D011A9197C6 CRC64;

  Query Match             42.8%;  Score 341;  DB 4;  Length 202;
  Best Local Similarity   65.8%;  Pred. No. 1.5e-28;
  Matches   75;  Conservative    4;  Mismatches    9;  Indels   26;  Gaps    2;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||| ||:|||:||||||               |||||| ||||||| 
Db         27 FPTIPLSRLFDNAMLRARRLYQLAYDTYQEF---------------NPQTSLCFSESIPT 71

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL-----------GTGPRFVNQHL 104
              |||| :|||||||||||||||||||||||||           |     | :||
Db         72 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL 125


RESULT 13
Q8MI74
ID   Q8MI74      PRELIMINARY;      PRT;   217 AA.
AC   Q8MI74;
DT   01-OCT-2002 (TrEMBLrel. 22, Created)
DT   01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Growth hormone-like protein 6 precursor.
GN   GHLP6.
OS   Callithrix jacchus (Common marmoset).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Platyrrhini; Callitrichidae; Callithrix.
OX   NCBI_TaxID=9483;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Wallis O.C., Wallis M.;
RT   "Characterisation of the GH gene cluster in a new-world monkey, the
RT   marmoset (Callithrix jacchus).";
RL   J. Mol. Endocrinol. 0:0-0(2002).
DR   EMBL; AJ489811; CAD34012.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Signal.
FT   SIGNAL        1     26       POTENTIAL.
FT   CHAIN        27    217       GROWTH HORMONE-LIKE PROTEIN 6.
SQ   SEQUENCE   217 AA;  25177 MW;  5ECF148798278F1A CRC64;
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  Query Match             40.5%;  Score 322.5;  DB 6;  Length 217;
  Best Local Similarity   64.7%;  Pred. No. 1.6e-26;
  Matches   66;  Conservative   13;  Mismatches   22;  Indels    1;  Gaps    1;

Qy          3 PTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTP 62
              | ||||||| :||||| :|| || :||:|||:  :|||||| ||:||:| : ||||||||
Db         28 PRIPLSRLFGDAMLRARQLHHLALETYREFEKNCVPKEQKYFFLRNPETFVCFSESIPTP 87

Qy         63 SNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHL 104
               ::||   |||:||| ||||||||||||:|   |  | |  |
Db         88 FHKEEMLGKSNVELLHISLLLIQSWLEPMQ-RLGSIFANSQL 128


RESULT 14
O70615
ID   O70615      PRELIMINARY;      PRT;   216 AA.
AC   O70615;
DT   01-AUG-1998 (TrEMBLrel. 07, Created)
DT   01-AUG-1998 (TrEMBLrel. 07, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Growth hormone precursor.
OS   Spalax leucodon ehrenbergi (Ehrenberg's mole rat).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Spalacinae;
OC   Nannospalax.
OX   NCBI_TaxID=30637;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=99124645; PubMed=9924177;
RA   Lioupis A., Nevo E., Wallis M.;
RT   "Cloning and characterisation of the gene encoding mole rat (Spalax
RT   ehrenbergi) growth hormone.";
RL   J. Mol. Endocrinol. 22:29-36(1999).
DR   EMBL; AJ005819; CAA06716.1; -.
DR   HSSP; P01241; 1AXI.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Signal.
FT   SIGNAL        1     26       POTENTIAL.
FT   CHAIN        27    216       GROWTH HORMONE.
SQ   SEQUENCE   216 AA;  24627 MW;  EEAB8A523BA0ADFE CRC64;

  Query Match             38.5%;  Score 306.5;  DB 11;  Length 216;
  Best Local Similarity   65.9%;  Pred. No. 8.2e-25;
  Matches   60;  Conservative   13;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db         27 FPAMPLSNLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 85

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
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              |: :|| ||:|::|||| ||||||||| |||
Db          86 PTGKEEAQQRSDMELLRFSLLLIQSWLGPVQ 116


RESULT 15
Q8MI73
ID   Q8MI73      PRELIMINARY;      PRT;   216 AA.
AC   Q8MI73;
DT   01-OCT-2002 (TrEMBLrel. 22, Created)
DT   01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT   01-JUN-2003 (TrEMBLrel. 24, Last annotation update)
DE   Growth hormone precursor.
GN   GH.
OS   Delphinus delphis (Saddleback dolphin) (Black sea dolphin).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Cetacea; Odontoceti; Delphinidae;
OC   Delphinus.
OX   NCBI_TaxID=9728;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RA   Maniou Z., Wallis O.C., Wallis M.;
RT   "Cloning and characterisation of the GH gene from the common dolphin
RT   (Delphinus delphis).";
RL   Submitted (JUN-2002) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; AJ492191; CAD37292.1; -.
DR   GO; GO:0005576; C:extracellular; IEA.
DR   GO; GO:0005179; F:hormone activity; IEA.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Signal.
FT   SIGNAL        1     26       POTENTIAL.
FT   CHAIN        27    216       GROWTH HORMONE.
SQ   SEQUENCE   216 AA;  24509 MW;  1EC467A84CCFEB02 CRC64;

  Query Match             37.8%;  Score 301.5;  DB 6;  Length 216;
  Best Local Similarity   64.8%;  Pred. No. 2.8e-24;
  Matches   59;  Conservative   14;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| ||||| |||:||| |||| : |:|| :|| | :  |||:||
Db         27 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNTQAAFCFSETIPA 85

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |: ::| ||:|::|||| ||||||||| |||
Db         86 PTGKDEAQQRSDVELLRFSLLLIQSWLGPVQ 116


Search completed: July 15, 2004, 16:41:01
Job time : 52.3794 secs
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GenCore version 5.1.6

OM protein - protein search, using sw model

Run on: July 15, 2004, 16:28:49 ; Search time 10.3545 Seconds
(without alignments)
754.314 Million cell updates/sec

Title: US-09-423-100-7
Perfect score: 797
Sequence: 1 MFPTIPLSRLFDNAMLRAHR.....IVEQCCTSICSLYQLENYCN 150

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 141681 seqs, 52070155 residues

Total number of hits satisfying chosen parameters: 141681

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : SwissProt_42:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	461	57.8	217	1	SOMA_HUMAN	P01241 homo sapien
2	461	57.8	217	1	SOMA_PANTR	P58756 pan troglod
3	460	57.7	217	1	SOMA_MACMU	P33093 macaca mula
4	437	54.8	217	1	SOMA_SAIBB	P58343 saimiri bol
5	434.5	54.5	217	1	SOM2_PANTR	P58757 pan troglod
6	432	54.2	217	1	SOMA_CALJA	Q9gmb3 callithrix
7	426.5	53.5	217	1	SOM2_HUMAN	P01242 homo sapien
8	399	50.1	217	1	SOM2_MACMU	Q07370 macaca mula
9	381	47.8	217	1	PLL_HUMAN	P01243 homo sapien
10	310.5	39.0	216	1	SOMA_MESAU	P37886 mesocricetu
11	307.5	38.6	190	1	SOMA_BALBO	P33092 balaenopter
12	306.5	38.5	216	1	SOMA_HORSE	P01245 equus cabal
13	306.5	38.5	217	1	SOMA_GALSE	Q9gka1 galago sene
14	306.5	38.5	217	1	SOMA_NYCPY	Q9gmb2 nycticebus
15	304.5	38.2	216	1	SOMA_MOUSE	P06880 mus musculu
16	302.5	38.0	216	1	SOMA_RABIT	P46407 oryctolagus
17	302.5	38.0	216	1	SOMA_RAT	P01244 rattus norv

18	301.5	37.8	190	1	SOMA_LOXAF	P20392 loxodonta a
19	301.5	37.8	216	1	SOMA_CANFA	P33711 canis famil
20	301.5	37.8	216	1	SOMA_FELCA	P46404 felis silve
21	301.5	37.8	216	1	SOMA_PIG	P01248 sus scrofa
22	299.5	37.6	216	1	SOMA_MUSVI	P19795 mustela vis
23	297.5	37.3	190	1	SOMA_LAMPA	P37885 lama guanic
24	295.5	37.1	190	1	SOMA_VULVU	P10766 vulpes vulp
25	291.5	36.6	215	1	SOMA_MONDO	Q9gl60 monodelphis
26	291.5	36.6	215	1	SOMA_TRIVU	O62754 trichosurus
27	289.5	36.3	217	1	SOMA_BOVIN	P01246 bos taurus
28	289.5	36.3	217	1	SOMA_CEREL	P56437 cervus elap
29	289.5	36.3	217	1	SOMA_SHEEP	P01247 ovis aries
30	282.5	35.4	217	1	SOMA_BUBBU	O18938 bubalus bub
31	278.5	34.9	216	1	SOMA_MELGA	P22077 meleagris g
32	277.5	34.8	110	1	INS_CERAE	P30407 cercopithec
33	277.5	34.8	110	1	INS_RABIT	P01311 oryctolagus
34	275.5	34.6	216	1	SOMA_CHICK	P08998 gallus gall
35	274.5	34.4	217	1	SOMA_STRCA	Q9pwg3 struthio ca
36	273.5	34.3	51	1	INS_BALPH	P01312 balaenopter
37	273.5	34.3	51	1	INS_ELEMA	P01316 elephas max
38	273.5	34.3	110	1	INS_MACFA	P30406 macaca fasc
39	272.5	34.2	190	1	SOMA_CRONO	P55755 crocodylus
40	272	34.1	110	1	INS_PANTR	P30410 pan troglod
41	270	33.9	110	1	INS_HUMAN	P01308 homo sapien
42	268.5	33.7	51	1	INS_ACOCA	P01324 acomys cahi
43	268.5	33.7	191	1	SOMA_CHEMY	P34005 chelonia my
44	266.5	33.4	105	1	INS_BOVIN	P01317 bos taurus
45	266.5	33.4	110	1	INS_SPETR	Q91xi3 spermophilu

ALIGNMENTS

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RESULT 1
SOMA_HUMAN
ID   SOMA_HUMAN     STANDARD;      PRT;   217 AA.
AC   P01241; Q14405; Q16631; Q9HBZ1; Q9UMJ7; Q9UNL5;
DT   21-JUL-1986 (Rel. 01, Created)
DT   01-MAR-1992 (Rel. 21, Last sequence update)
DT   10-OCT-2003 (Rel. 42, Last annotation update)
DE   Somatotropin precursor (Growth hormone) (GH) (GH-N) (Pituitary growth
DE   hormone) (Growth hormone 1).
GN   GH1.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RX   MEDLINE=80034477; PubMed=386281;
RA   Roskam W., Rougeon F.;
RT   "Molecular cloning and nucleotide sequence of the human growth
RT   hormone structural gene.";
RL   Nucleic Acids Res. 7:305-320(1979).
RN   [2]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RX   MEDLINE=79203293; PubMed=377496;
```

RA Martial J.A., Hallewell R.A., Baxter J.D., Goodman H.M.;
RT "Human growth hormone: complementary DNA cloning and expression in
RT bacteria.";
RL Science 205:602-607(1979).
RN [3]
RP SEQUENCE FROM N.A. (ISOFORM 1), AND POSSIBLE ALTERNATIVE SPLICING.
RX MEDLINE=82014939; PubMed=6269091;
RA Denoto F.M., Moore D.D., Goodman H.M.;
RT "Human growth hormone DNA sequence and mRNA structure: possible
RT alternative splicing.";
RL Nucleic Acids Res. 9:3719-3730(1981).
RN [4]
RP SEQUENCE FROM N.A.
RX MEDLINE=83182010; PubMed=7169009;
RA Seeburg P.H.;
RT "The human growth hormone gene family: nucleotide sequences show
RT recent divergence and predict a new polypeptide hormone.";
RL DNA 1:239-249(1982).
RN [5]
RP SEQUENCE FROM N.A.
RX MEDLINE=89307277; PubMed=2744760;
RA Chen E.Y., Liao Y.C., Smith D.H., Barrera-Saldana H.A.,
RA Gelinas R.E., Seeburg P.H.;
RT "The human growth hormone locus: nucleotide sequence, biology, and
RT evolution.";
RL Genomics 4:479-497(1989).
RN [6]
RP SEQUENCE FROM N.A. (ISOFORM 3).
RC TISSUE=Pituitary;
RA Gu J., Huang Q.-H., Li N., Xu S.-H., Han Z.-G., Fu G., Chen Z.;
RT "A novel gene expressed in human pituitary.";
RL Submitted (SEP-1999) to the EMBL/GenBank/DDBJ databases.
RN [7]
RP SEQUENCE FROM N.A. (ISOFORM 4).
RC TISSUE=Pituitary;
RX MEDLINE=20402571; PubMed=10931946;
RA Hu R.-M., Han Z.-G., Song H.-D., Peng Y.-D., Huang Q.-H., Ren S.-X.,
RA Gu Y.-J., Huang C.-H., Li Y.-B., Jiang C.-L., Fu G., Zhang Q.-H.,
RA Gu B.-W., Dai M., Mao Y.-F., Gao G.-F., Rong R., Ye M., Zhou J.,
RA Xu S.-H., Gu J., Shi J.-X., Jin W.-R., Zhang C.-K., Wu T.-M.,
RA Huang G.-Y., Chen Z., Chen M.-D., Chen J.-L.;
RT "Gene expression profiling in the human hypothalamus-pituitary-adrenal
RT axis and full-length cDNA cloning.";
RL Proc. Natl. Acad. Sci. U.S.A. 97:9543-9548(2000).
RN [8]
RP SEQUENCE OF 1-26 FROM N.A.
RX MEDLINE=86137393; PubMed=3912261;
RA Gray G.L., Baldridge J.S., McKeown K.S., Heyneker H.L., Chang C.N.;
RT "Periplasmic production of correctly processed human growth hormone in
RT Escherichia coli: natural and bacterial signal sequences are
RT interchangeable.";
RL Gene 39:247-254(1985).
RN [9]
RP SEQUENCE OF 27-217.
RX MEDLINE=69289202; PubMed=5810834;
RA Li C.H., Dixon J.S., Liu W.-K.;
RT "Human pituitary growth hormone. XIX. The primary structure of the

RT hormone.";
RL Arch. Biochem. Biophys. 133:70-91(1969).
RN [10]
RP SEQUENCE OF 27-217, AND REVISIONS.
RX MEDLINE=72143935; PubMed=5144027;
RA Li C.H., Dixon J.S.;
RT "Human pituitary growth hormone. 32. The primary structure of the
RT hormone: revision.";
RL Arch. Biochem. Biophys. 146:233-236(1971).
RN [11]
RP REVISION.
RX MEDLINE=73092028; PubMed=4675454;
RA Bewley T.A., Dixon J.S., Li C.H.;
RT "Sequence comparison of human pituitary growth hormone, human
RT chorionic somatomammotropin, and ovine pituitary growth and
RT lactogenic hormones.";
RL Int. J. Pept. Protein Res. 4:281-287(1972).
RN [12]
RP SEQUENCE OF 27-61 AND 102-124.
RX MEDLINE=71139765; PubMed=5279046;
RA Niall H.D.;
RT "Revised primary structure for human growth hormone.";
RL Nature New Biol. 230:90-91(1971).
RN [13]
RP REVISIONS TO 119-120 AND 157-159.
RX MEDLINE=71153968; PubMed=5279528;
RA Niall H.D., Hogan M.L., Sauer R., Rosenblum I.Y., Greenwood F.C.;
RT "Sequences of pituitary and placental lactogenic and growth hormones:
RT evolution from a primordial peptide by gene reduplication.";
RL Proc. Natl. Acad. Sci. U.S.A. 68:866-869(1971).
RN [14]
RP REVISION.
RA Niall H.D.;
RT "The chemistry of the human lactogenic hormones.";
RL (In) Griffiths K. (eds.);
RL Prolactin and carcinogenesis, Proc. fourth tenovus workshop prolactin,
RL pp.13-20, Alpha Omega Alpha Press, Cardiff (1972).
RN [15]
RP SEQUENCE OF 27-79 (ISOFORM 2).
RX MEDLINE=81117361; PubMed=7462247;
RA Chapman G.E., Rogers K.M., Brittain T., Bradshaw R.A., Bates O.J.,
RA Turner C., Cary P.D., Crane-Robinson C.;
RT "The 20,000 molecular weight variant of human growth hormone.
RT Preparation and some physical and chemical properties.";
RL J. Biol. Chem. 256:2395-2401(1981).
RN [16]
RP SEQUENCE OF 46-80 (ISOFORM 2).
RX MEDLINE=80130196; PubMed=7356479;
RA Lewis U.J., Bonewald L.F., Lewis L.J.;
RT "The 20,000-dalton variant of human growth hormone: location of the
RT amino acid deletions.";
RL Biochem. Biophys. Res. Commun. 92:511-516(1980).
RN [17]
RP DEAMIDATION OF GLN-163 AND ASN-178.
RX MEDLINE=82052997; PubMed=7028740;
RA Lewis U.J., Singh R.N., Bonewald L.F., Seavey B.K.;
RT "Altered proteolytic cleavage of human growth hormone as a result of

RT deamidation.";
RL J. Biol. Chem. 256:11645-11650(1981).
RN [18]
RP REVIEW.
RX MEDLINE=99321812; PubMed=10393484;
RA Baumann G.;
RT "Growth hormone heterogeneity in human pituitary and plasma.";
RL Horm. Res. 51 Suppl. 1:2-6(1999).
RN [19]
RP 3D-STRUCTURE MODELING.
RX MEDLINE=88190073; PubMed=3447173;
RA Cohen F.E., Kuntz I.D.;
RT "Prediction of the three-dimensional structure of human growth
RT hormone.";
RL Proteins 2:162-166(1987).
RN [20]
RP X-RAY CRYSTALLOGRAPHY (2.8 ANGSTROMS).
RX MEDLINE=92196577; PubMed=1549776;
RA de Vos A.M., Ultsch M., Kossiakoff A.A.;
RT "Human growth hormone and extracellular domain of its receptor:
RT crystal structure of the complex.";
RL Science 255:306-312(1992).
RN [21]
RP X-RAY CRYSTALLOGRAPHY (2.9 ANGSTROMS).
RX MEDLINE=95075462; PubMed=7984244;
RA Somers W., Ultsch M., de Vos A.M., Kossiakoff A.A.;
RT "The X-ray structure of a growth hormone-prolactin receptor complex.";
RL Nature 372:478-481(1994).
RN [22]
RP X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS).
RA Chantalat L., Chirgadze N.Y., Jones N., Korber F., Navaza J.,
RA Pavlovsk A.G., Wlodawer A.;
RT "The crystal-structure of wild-type growth-hormone at 2.5-A
RT resolution.";
RL Protein Pept. Lett. 2:333-340(1995).
RN [23]
RP X-RAY CRYSTALLOGRAPHY (2.5 ANGSTROMS).
RX MEDLINE=97113023; PubMed=8943276;
RA Sundstroem M., Lundqvist T., Roedin J., Giebel L.B., Milligan D.,
RA Norstedt G.;
RT "Crystal structure of an antagonist mutant of human growth hormone,
RT G120R, in complex with its receptor at 2.9-A resolution.";
RL J. Biol. Chem. 271:32197-32203(1996).
RN [24]
RP VARIANT KOWARSKI SYNDROME CYS-103.
RX MEDLINE=96150232; PubMed=8552145;
RA Takahashi Y., Kaji H., Okimura Y., Goji K., Abe H., Chihara K.;
RT "Short stature caused by a mutant growth hormone.";
RL New Engl. J. Med. 334:432-436(1996).
RN [25]
RP ERRATUM.
RA Takahashi Y., Kaji H., Okimura Y., Goji K., Abe H., Chihara K.;
RL New Engl. J. Med. 334:1207-1207(1996).
RN [26]
RP VARIANT KOWARSKI SYNDROME GLY-138.
RX MEDLINE=97426478; PubMed=9276733;
RA Takahashi Y., Shirono H., Arisaka O., Takahashi K., Yagi T., Koga J.,

```
RA   Kaji H., Okimura Y., Abe H., Tanaka T., Chihara K.;
RT   "Biologically inactive growth hormone caused by an amino acid
RT   substitution.";
RL   J. Clin. Invest. 100:1159-1165(1997).
RN   [27]
RP   VARIANT CYS-105.
RX   MEDLINE=99318093; PubMed=10391209;
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  Query Match             57.8%;  Score 461;  DB 1;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 2.3e-38;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
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Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
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Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
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Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167
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RESULT 2
SOMA_PANTR
ID   SOMA_PANTR     STANDARD;      PRT;   217 AA.
AC   P58756;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone) (GH) (GH-N) (Pituitary growth
DE   hormone) (Growth hormone 1).
GN   GH1.
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D., Santiago D., Barrera-Saldana H.;
RT   "Independent duplication of the growth hormone gene in three
RT   Anthropoidean lineages.";
RL   Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues (By similarity).
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
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CC   the European Bioinformatics Institute.  There are no  restrictions on  its
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------------
DR   EMBL; AF374232; AAL72284.1; -.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       SOMATOTROPIN.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24843 MW;  FEA295EDE0518674 CRC64;

  Query Match             57.8%;  Score 461;  DB 1;  Length 217;
  Best Local Similarity   70.3%;  Pred. No. 2.3e-38;
  Matches  102;  Conservative    7;  Mismatches   20;  Indels   16;  Gaps    4;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGS----------HLVE 111
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Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQF-LRSVFANSLVYGASDSNVYDLLKDLEE 145

Qy        112 ALYLVCG--ERGFFYTPKTRGIVEQ 134
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Db        146 GIQTLMGRLEDG---SPRTGQIFKQ 167


RESULT 3
SOMA_MACMU
ID   SOMA_MACMU     STANDARD;      PRT;   217 AA.
AC   P33093;
DT   01-OCT-1993 (Rel. 27, Created)
DT   01-OCT-1994 (Rel. 30, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone) (GH) (GH-N) (Pituitary growth
DE   hormone) (Growth hormone 1).
GN   GH1.
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=94008724; PubMed=8404617;
RA   Golos T.G., Durning M., Fisher J.M., Fowler P.D.;
RT   "Cloning of four growth hormone/chorionic somatomammotropin-related
RT   complementary deoxyribonucleic acids differentially expressed during
RT   pregnancy in the rhesus monkey placenta.";
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RL   Endocrinology 133:1744-1752(1993).
RN   [2]
RP   SEQUENCE OF 27-217.
RX   MEDLINE=86129460; PubMed=3080959;
RA   Li C.H., Chung D., Lahm H.W., Stein S.;
RT   "The primary structure of monkey pituitary growth hormone.";
RL   Arch. Biochem. Biophys. 245:287-291(1986).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; L16556; AAA18842.1; -.
DR   PIR; I67410; I67410.
DR   HSSP; P01241; 1AXI.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26
FT   CHAIN        27    217       SOMATOTROPIN.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
FT   CONFLICT    100    100       E -> Q (IN REF. 2).
FT   CONFLICT    179    179       N -> D (IN REF. 2).
SQ   SEQUENCE   217 AA;  24913 MW;  2C5180341EEC46D0 CRC64;

  Query Match             57.7%;  Score 460;  DB 1;  Length 217;
  Best Local Similarity   98.9%;  Pred. No. 2.9e-38;
  Matches   90;  Conservative    0;  Mismatches    1;  Indels    0;  Gaps    0;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |||||||||||||||||||||||||||||||
Db         87 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 117


RESULT 4
SOMA_SAIBB
ID   SOMA_SAIBB     STANDARD;      PRT;   217 AA.
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AC   P58343;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1.
OS   Saimiri boliviensis boliviensis (Bolivian squirrel monkey).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Platyrrhini; Cebidae; Cebinae; Saimiri.
OX   NCBI_TaxID=39432;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=21265430; PubMed=11371582;
RA   Liu J.C., Makova K.D., Adkins R.M., Gibson S., Li W.H.;
RT   "Episodic evolution of growth hormone in primates and emergence of the
RT   species specificity of human growth hormone receptor.";
RL   Mol. Biol. Evol. 18:945-953(2001).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues (By similarity).
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ----------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
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CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; AF339060; AAK62287.1; -.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       SOMATOTROPIN.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24864 MW;  9515289992C529F7 CRC64;

  Query Match             54.8%;  Score 437;  DB 1;  Length 217;
  Best Local Similarity   91.3%;  Pred. No. 5.4e-36;
  Matches   84;  Conservative    5;  Mismatches    3;  Indels    0;  Gaps    0;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||| ||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLLDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL 93
              |::::|||||||||||||||:||||| |||||
```

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Db         87 PASKKETQQKSNLELLRISLILIQSWFEPVQL 118


RESULT 5
SOM2_PANTR
ID   SOM2_PANTR     STANDARD;      PRT;   217 AA.
AC   P58757;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Growth hormone variant precursor (GH-V) (Placenta-specific growth
DE   hormone) (Growth hormone 2).
GN   GH2.
OS   Pan troglodytes (Chimpanzee).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Pan.
OX   NCBI_TaxID=9598;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Revol A., Esquivel D., Santiago D., Barrera-Saldana H.;
RT   "Independent duplication of the growth hormone gene in three
RT   Anthropoidean lineages.";
RL   Submitted (APR-2001) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- TISSUE SPECIFICITY: Expressed in the placenta.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF374233; AAL72285.1; -.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Placenta; Signal; Glycoprotein.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       GROWTH HORMONE VARIANT.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24990 MW;  1592A429075677DE CRC64;

  Query Match             54.5%;  Score 434.5;  DB 1;  Length 217;
  Best Local Similarity   78.9%;  Pred. No. 9.6e-36;
  Matches   90;  Conservative    4;  Mismatches    9;  Indels   11;  Gaps    1;
```

```
Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||||||||||||:|||:|||||||||| |||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRAHRLYQLAYDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL-----------GTGPRFVNQHL 104
              |||| :|||||||||||||||||||||||||           |     | :||
Db         87 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL 140


RESULT 6
SOMA_CALJA
ID   SOMA_CALJA     STANDARD;      PRT;   217 AA.
AC   Q9GMB3;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1.
OS   Callithrix jacchus (Common marmoset).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Platyrrhini; Callitrichidae;
OC   Callithrix.
OX   NCBI_TaxID=9483;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Wallis O.C., Wallis M.;
RT   "Cloning and characterisation of a putative growth hormone encoding
RT   gene from the marmoset (Callithrix jacchus).";
RL   Submitted (AUG-2000) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues (By similarity).
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AJ297563; CAC03481.1; -.
DR   HSSP; P01241; 1A22.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       SOMATOTROPIN.
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FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24959 MW;  E102151A12CE6192 CRC64;

  Query Match             54.2%;  Score 432;  DB 1;  Length 217;
  Best Local Similarity   91.2%;  Pred. No. 1.7e-35;
  Matches   83;  Conservative    5;  Mismatches    3;  Indels    0;  Gaps    0;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||||| ||||||||||||||||||||||||||||||||||||||| |||||||
Db         27 FPTIPLSRLLDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |::::|||||||||||||:|||||||| ||||
Db         87 PASKKETQQKSNLELLRMSLLLIQSWFEPVQ 117


RESULT 7
SOM2_HUMAN
ID   SOM2_HUMAN     STANDARD;      PRT;   217 AA.
AC   P01242; P09587;
DT   21-JUL-1986 (Rel. 01, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   10-OCT-2003 (Rel. 42, Last annotation update)
DE   Growth hormone variant precursor (GH-V) (Placenta-specific growth
DE   hormone) (Growth hormone 2).
GN   GH2.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RX   MEDLINE=83182010; PubMed=7169009;
RA   Seeburg P.H.;
RT   "The human growth hormone gene family: nucleotide sequences show
RT   recent divergence and predict a new polypeptide hormone.";
RL   DNA 1:239-249(1982).
RN   [2]
RP   SEQUENCE FROM N.A. (ISOFORMS 1 AND 2).
RX   MEDLINE=88243769; PubMed=3379057;
RA   Cooke N.E., Ray J., Emery J.G., Liebhaber S.A.;
RT   "Two distinct species of human growth hormone-variant mRNA in the
RT   human placenta predict the expression of novel growth hormone
RT   proteins.";
RL   J. Biol. Chem. 263:9001-9006(1988).
RN   [3]
RP   SEQUENCE FROM N.A. (ISOFORM 1).
RX   MEDLINE=89024984; PubMed=2460050;
RA   Igout A., Scippo M.L., Frankenne F., Hennen G.;
RT   "Cloning and nucleotide sequence of placental hGH-V cDNA.";
RL   Arch. Int. Physiol. Biochim. 96:63-67(1988).
RN   [4]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=89307277; PubMed=2744760;
RA   Chen E.Y., Liao Y.C., Smith D.H., Barrera-Saldana H.A.,
RA   Gelinas R.E., Seeburg P.H.;
```

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RT   "The human growth hormone locus: nucleotide sequence, biology, and
RT   evolution.";
RL   Genomics 4:479-497(1989).
RN   [5]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Placenta;
RX   MEDLINE=22388257; PubMed=12477932;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length
RT   human and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN   [6]
RP   REVIEW.
RX   MEDLINE=99321812; PubMed=10393484;
RA   Baumann G.;
RT   "Growth hormone heterogeneity in human pituitary and plasma.";
RL   Horm. Res. 51 Suppl. 1:2-6(1999).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBUNIT: Monomer, dimer, trimer, tetramer and pentamer, disulfide-
CC       linked or non-covalently associated, in homopolymeric and
CC       heteropolymeric combinations. Can also form a complex either with
CC       GHBP or with the alpha2-macroglobulin complex.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- ALTERNATIVE PRODUCTS:
CC       Event=Alternative splicing; Named isoforms=2;
CC       Name=1; Synonyms=GH-V1;
CC         IsoId=P01242-1; Sequence=Displayed;
CC       Name=2; Synonyms=GH-V2;
CC         IsoId=P01242-2; Sequence=VSP_006203;
CC         Note=No experimental confirmation available;
CC   -!- TISSUE SPECIFICITY: Expressed in the placenta.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   ----------------------------------------------------------------------
DR   EMBL; K00470; AAA98619.1; -.
DR   EMBL; J03756; AAB59547.1; -.
DR   EMBL; J03756; AAB59548.1; -.
DR   EMBL; M38451; AAA35891.1; -.
DR   EMBL; J03071; AAA52552.1; -.
DR   EMBL; BC020760; AAH20760.1; -.
DR   PIR; A28072; STHUV2.
DR   PIR; D32435; STHUV.
DR   HSSP; P01241; 1A22.
DR   Genew; HGNC:4262; GH2.
DR   MIM; 139240; -.
DR   GO; GO:0005180; F:peptide hormone; TAS.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Placenta; Signal; Glycoprotein; Alternative splicing;
KW   Polymorphism.
FT   SIGNAL        1     26
FT   CHAIN        27    217       GROWTH HORMONE VARIANT.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
FT   CARBOHYD    166    166       N-LINKED (GLCNAC. . .) (POTENTIAL).
FT   VARSPLIC    153    217       RLEDGSPRTGQIFNQSYSKFDTKSHNDDALLKNYGLLYCFR
FT                                KDMDKVETFLRIVQCRSVEGSCGF -> VRVAPGIPNPGAP
FT                                LASRDWGEKHCCPLFSSQALTQENSPYSSFPLVNPPGLSLQ
FT                                PGGEGGKWMNERGREQCPSAWPLLLFLHFAEAGRWQPPDWA
FT                                DLQSVLQQV (in isoform 2).
FT                                /FTId=VSP_006203.
FT   VARIANT      90     90       R -> W (in dbSNP:5389).
FT                                /FTId=VAR_014591.
FT   CONFLICT    109    109       I -> T (IN REF. 2).
SQ   SEQUENCE   217 AA;  24999 MW;  7B9324698E822F96 CRC64;

  Query Match             53.5%;  Score 426.5;  DB 1;  Length 217;
  Best Local Similarity   78.1%;  Pred. No. 5.9e-35;
  Matches   89;  Conservative    4;  Mismatches   10;  Indels   11;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              |||||||||||||||| ||:|||:|||||||||| |||||||||||||| |||||||
Db         27 FPTIPLSRLFDNAMLRARRLYQLAYDTYQEFEEAYILKEQKYSFLQNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL-----------GTGPRFVNQHL 104
              |||| :|||||||||||||||||||||||||           |     | :||
Db         87 PSNRVKTQQKSNLELLRISLLLIQSWLEPVQLLRSVFANSLVYGASDSNVYRHL 140


RESULT 8
SOM2_MACMU
ID   SOM2_MACMU     STANDARD;      PRT;   217 AA.
AC   Q07370; Q28494;
```

```
DT   01-NOV-1997 (Rel. 35, Created)
DT   01-NOV-1997 (Rel. 35, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Growth hormone variant precursor (GH-V) (Placenta-specific growth
DE   hormone) (Growth hormone 2).
GN   GH2.
OS   Macaca mulatta (Rhesus macaque).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Cercopithecidae;
OC   Cercopithecinae; Macaca.
OX   NCBI_TaxID=9544;
RN   [1]
RP   SEQUENCE FROM N.A.
RA   Golos T.G.;
RL   Submitted (JAN-1994) to the EMBL/GenBank/DDBJ databases.
RN   [2]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Placenta;
RX   MEDLINE=94008724; PubMed=8404617;
RA   Golos T.G., Durning M., Fisher J.M., Fowler P.D.;
RT   "Cloning of four growth hormone/chorionic somatomammotropin-related
RT   complementary deoxyribonucleic acids differentially expressed during
RT   pregnancy in the rhesus monkey placenta.";
RL   Endocrinology 133:1744-1752(1993).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted (By similarity).
CC   -!- TISSUE SPECIFICITY: Expressed in the placenta.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U02293; AAA03391.1; -.
DR   EMBL; L16555; AAA20180.1; -.
DR   PIR; I67411; I67411.
DR   HSSP; P01241; 1HGU.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Placenta; Signal; Glycoprotein.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       GROWTH HORMONE VARIANT.
FT   DISULFID     79    191       BY SIMILARITY.
FT   DISULFID    208    215       BY SIMILARITY.
FT   CONFLICT     57     57       L -> F (IN REF. 2).
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FT   CONFLICT    152    152       E -> G (IN REF. 2).
SQ   SEQUENCE   217 AA;  25221 MW;  8DB116CBC24EA090 CRC64;

  Query Match             50.1%;  Score 399;  DB 1;  Length 217;
  Best Local Similarity   66.9%;  Pred. No. 3.1e-32;
  Matches   85;  Conservative    9;  Mismatches   19;  Indels   14;  Gaps    2;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              ||||||| ||: |: ||| ||:|||||| : |||||||||||||:|||||| |||||||
Db         27 FPTIPLSWLFNTAVFRAHHLHKLAFDTYPKLEEAYIPKEQKYSFLRNPQTSLCFSESIPT 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQLGTGPRFVNQHLCGSHLVEA-------LY 114
              |||:|||||||||||| ||||||||||||         : :  :|||          ||
Db         87 PSNKEETQQKSNLELLHISLLLIQSWLEPVQF-------LRSVFANHLVHTNSNFDIYLY 139

Qy        115 LVCGERG 121
              |   | |
Db        140 LKKLEEG 146


RESULT 9
PLL_HUMAN
ID   PLL_HUMAN      STANDARD;      PRT;   217 AA.
AC   P01243;
DT   21-JUL-1986 (Rel. 01, Created)
DT   01-APR-1988 (Rel. 07, Last sequence update)
DT   15-MAR-2004 (Rel. 43, Last annotation update)
DE   Lactogen precursor (Choriomammotropin) (Chorionic somatomammotropin).
GN   CSH1 AND CSH2.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A. (GENE CSH1).
RX   MEDLINE=85030426; PubMed=6208192;
RA   Selby M.J., Barta A., Baxter J.D., Bell G.I., Eberhardt N.L.;
RT   "Analysis of a major human chorionic somatomammotropin gene. Evidence
RT   for two functional promoter elements.";
RL   J. Biol. Chem. 259:13131-13138(1984).
RN   [2]
RP   SEQUENCE FROM N.A. (GENE CSH2).
RX   MEDLINE=87161235; PubMed=3030680;
RA   Hirt H., Kimelman J., Birnbaum M.J., Chen E.Y., Seeburg P.H.,
RA   Eberhardt N.L., Barta A.;
RT   "The human growth hormone gene locus: structure, evolution, and
RT   allelic variations.";
RL   DNA 6:59-70(1987).
RN   [3]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=83160916; PubMed=6300056;
RA   Barrera-Saldana H.A., Seeburg P.H., Saunders G.F.;
RT   "Two structurally different genes produce the same secreted human
RT   placental lactogen hormone.";
RL   J. Biol. Chem. 258:3787-3793(1983).
RN   [4]
RP   SEQUENCE FROM N.A. (GENES CSH1 AND CSH2).
```

RX MEDLINE=89307277; PubMed=2744760;
RA Chen E.Y., Liao Y.C., Smith D.H., Barrera-Saldana H.A., Gelinas R.E.,
RA Seeburg P.H.;
RT "The human growth hormone locus: nucleotide sequence, biology, and
RT evolution.";
RL Genomics 4:479-497(1989).
RN [5]
RP SEQUENCE.
RX MEDLINE=83182010; PubMed=7169009;
RA Seeburg P.H.;
RT "The human growth hormone gene family: nucleotide sequences show
RT recent divergence and predict a new polypeptide hormone.";
RL DNA 1:239-249(1982).
RN [6]
RP SEQUENCE FROM N.A.
RC TISSUE=Placenta, and Uterus;
RX MEDLINE=22388257; PubMed=12477932;
RA Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
RA Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT "Generation and initial analysis of more than 15,000 full-length
RT human and mouse cDNA sequences.";
RL Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
RN [7]
RP SEQUENCE OF 50-217 FROM N.A.
RX MEDLINE=78071761; PubMed=593368;
RA Shine J., Seeburg P.H., Martial J.A., Baxter J.D., Goodman H.M.;
RT "Construction and analysis of recombinant DNA for human chorionic
RT somatomammotropin.";
RL Nature 270:494-499(1977).
RN [8]
RP SEQUENCE OF 27-217.
RX MEDLINE=73201971; PubMed=4712450;
RA Li C.H., Dixon J.S., Chung D.;
RT "Amino acid sequence of human chorionic somatomammotropin.";
RL Arch. Biochem. Biophys. 155:95-110(1973).
RN [9]
RP SEQUENCE OF 27-117.
RX MEDLINE=72016313; PubMed=5286363;
RA Sherwood L.M., Handwerger S., McLaurin W.D., Lanner M.;
RT "Amino-acid sequence of human placental lactogen.";
RL Nature New Biol. 233:59-61(1971).
RN [10]

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RP   ERRATUM.
RA   Sherwood L.M., Handwerger S., McLaurin W.D., Lanner M.;
RL   Nature New Biol. 235:64-64(1972).
RN   [11]
RP   INTERCHAIN DISULFIDE BONDS.
RX   MEDLINE=79173081; PubMed=438159;
RA   Schneider A.B., Kowalski K., Russell J., Sherwood L.M.;
RT   "Identification of the interchain disulfide bonds of dimeric human
RT   placental lactogen.";
RL   J. Biol. Chem. 254:3782-3787(1979).
CC   -!- FUNCTION: Similar to that of somatotropin.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- MISCELLANEOUS: The sequence of CSH1 is shown.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; V00573; CAA23836.1; -.
DR   EMBL; J00289; AAA98747.1; -.
DR   EMBL; K02401; AAA52115.1; -.
DR   EMBL; M15894; AAA52116.1; -.
DR   EMBL; J03071; AAA52551.1; -.
DR   EMBL; J00118; AAA98621.1; -.
DR   EMBL; BC002717; AAH02717.1; -.
DR   EMBL; BC005921; AAH05921.1; -.
DR   EMBL; BC020756; AAH20756.1; -.
DR   PIR; A26449; A26449.
DR   PIR; C32435; LCHUC.
DR   HSSP; P01241; 1A22.
DR   Genew; HGNC:2440; CSH1.
DR   Genew; HGNC:2441; CSH2.
DR   MIM; 150200; -.
DR   GO; GO:0007565; P:pregnancy; TAS.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Placenta; Multigene family; Signal.
FT   SIGNAL        1     26
FT   CHAIN        27    217       LACTOGEN.
FT   DISULFID     79    191
FT   DISULFID    208    215
FT   DISULFID    208    208       INTERCHAIN (WITH C-215 IN A DIMER).
FT   DISULFID    215    215       INTERCHAIN (WITH C-208 IN A DIMER).
FT   VARIANT       3      3       P -> A (IN CSH2).
FT                                /FTId=VAR_007166.
FT   VARIANT     104    105       IS -> L (IN CSH2).
FT                                /FTId=VAR_007167.
FT   CONFLICT     84     84       I -> T (IN REF. 9).
FT   CONFLICT     95     95       MISSING (IN REF. 9).
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FT   CONFLICT    116    116       MISSING (IN REF. 9).
FT   CONFLICT    134    136       SDD -> BBS (IN REF. 9).
SQ   SEQUENCE   217 AA;  25020 MW;  235B0DC7A713F431 CRC64;

  Query Match             47.8%;  Score 381;  DB 1;  Length 217;
  Best Local Similarity   82.0%;  Pred. No. 1.8e-30;
  Matches   73;  Conservative    8;  Mismatches    8;  Indels    0;  Gaps    0;

Qy          4 TIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPTPS 63
              |:||||||:|||:||| |||| |||||||| ||||:|||||| : |||  ||:|||||
Db         29 TVPLSRLFDHAMLQAHRAHQLAIDTYQEFEETYIPKDQKYSFLHDSQTSFCFSDSIPTPS 88

Qy         64 NREETQQKSNLELLRISLLLIQSWLEPVQ 92
              | ||||||||||||||||||:||||||:
Db         89 NMEETQQKSNLELLRISLLLIESWLEPVR 117


RESULT 10
SOMA_MESAU
ID   SOMA_MESAU     STANDARD;      PRT;   216 AA.
AC   P37886;
DT   01-OCT-1994 (Rel. 30, Created)
DT   01-OCT-1994 (Rel. 30, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1 OR GH.
OS   Mesocricetus auratus (Golden hamster).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Cricetinae;
OC   Mesocricetus.
OX   NCBI_TaxID=10036;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=92063850; PubMed=1954881;
RA   Southard J.N., Sanchez-Jimenez F., Campbell G.T., Talamantes F.;
RT   "Sequence and expression of hamster prolactin and growth hormone
RT   messenger RNAs.";
RL   Endocrinology 129:2965-2971(1991).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
CC   This SWISS-PROT entry is copyright. It is produced through a collaboration
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; S66299; AAB20368.1; -.
DR   PIR; B49159; B49159.
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DR   HSSP; P01246; 1BST.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    216       SOMATOTROPIN.
FT   DISULFID     78    189       BY SIMILARITY.
FT   DISULFID    206    214       BY SIMILARITY.
SQ   SEQUENCE   216 AA;  24690 MW;  3B69CE32AB6F1166 CRC64;

  Query Match             39.0%;  Score 310.5;  DB 1;  Length 216;
  Best Local Similarity   67.0%;  Pred. No. 1.7e-23;
  Matches   61;  Conservative   13;  Mismatches   16;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| |||| |||:||| |||| |:|| :|| ||:  |||:||
Db         27 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQTAFCFSETIPA 85

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |: :|| ||:|::|||| ||||||||| |||
Db         86 PTGKEEAQQRSDMELLRFSLLLIQSWLGPVQ 116


RESULT 11
SOMA_BALBO
ID   SOMA_BALBO     STANDARD;      PRT;   190 AA.
AC   P33092;
DT   01-OCT-1993 (Rel. 27, Created)
DT   01-OCT-1993 (Rel. 27, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin (Growth hormone).
GN   GH1.
OS   Balaenoptera borealis (Sei whale).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Cetartiodactyla; Cetacea; Mysticeti;
OC   Balaenopteridae; Balaenoptera.
OX   NCBI_TaxID=9768;
RN   [1]
RP   SEQUENCE.
RX   MEDLINE=83000569; PubMed=7115813;
RA   Yudaev N.A., Pankov Y.A., Bulatov A.A., Osipova T.A.;
RT   "Amino acid sequence of seiwhale somatotropin.";
RL   Biokhimiia 47:1059-1069(1982).
RN   [2]
RP   PRELIMINARY PARTIAL SEQUENCE.
RA   Osipova T.A., Bulatov A.A., Pankov Y.A.;
RT   "Structural studies of tryptic peptides from large cyanogen bromide
RT   fragments of sei whale (Balalnoptera borealis) somatotropin.";
RL   Bioorg. Khim. 4:1589-1599(1978).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
```

```
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
DR   PIR; JN0387; JN0387.
DR   PIR; PN0140; PN0140.
DR   HSSP; P01241; 1AXI.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary.
FT   DISULFID     52    163       BY SIMILARITY.
FT   DISULFID    180    188       BY SIMILARITY.
SQ   SEQUENCE   190 AA;  21835 MW;  09FBFF6DB14A75D6 CRC64;

  Query Match             38.6%;  Score 307.5;  DB 1;  Length 190;
  Best Local Similarity   67.0%;  Pred. No. 2.8e-23;
  Matches   61;  Conservative   14;  Mismatches   15;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| ||:|| |||:||| ||||: |:| |||| |:: ||| |||
Db          1 FPAMPLSSLFANAVLRAQHLHELAADTYKEFERAYIPEGQRY-FLQNAQSTGCFSEVIPT 59

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
              |:|::| ||:|::|||| ||||||||| |||
Db         60 PANKDEAQQRSDVELLRFSLLLIQSWLGPVQ 90


RESULT 12
SOMA_HORSE
ID   SOMA_HORSE     STANDARD;      PRT;   216 AA.
AC   P01245;
DT   21-JUL-1986 (Rel. 01, Created)
DT   01-NOV-1995 (Rel. 32, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1.
OS   Equus caballus (Horse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Perissodactyla; Equidae; Equus.
OX   NCBI_TaxID=9796;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Pituitary;
RX   MEDLINE=94266171; PubMed=8206392;
RA   Ascacio-Martinez J.A., Barrera-Saldana H.A.;
RT   "Sequence of a cDNA encoding horse growth hormone.";
RL   Gene 143:299-300(1994).
RN   [2]
RP   SEQUENCE OF 27-216.
RX   MEDLINE=77005410; PubMed=965151;
RA   Zakin M.M., Poskus E., Langton A.A., Ferrara P., Santome J.A.,
RA   Dellacha J.M., Paladini A.C.;
RT   "Primary structure of equine growth hormone.";
RL   Int. J. Pept. Protein Res. 8:435-444(1976).
RN   [3]
```

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RP   PRELIMINARY SEQUENCE OF 27-216.
RX   MEDLINE=74020362; PubMed=4747849;
RA   Zakin M.M., Poskus E., Dellacha J.M., Paladini A.C., Santome J.A.;
RT   "The amino acid sequence of equine growth hormone.";
RL   FEBS Lett. 34:353-355(1973).
RN   [4]
RP   SEQUENCE OF 68-95 AND 183-216.
RA   Zakin M.M., Poskus E., Dellacha J.M., Paladini A.C., Santome J.A.;
RT   "Amino acid sequences around the cystine residues in equine growth
RT   hormone.";
RL   FEBS Lett. 25:77-82(1972).
RN   [5]
RP   SEQUENCE OF 202-216.
RX   MEDLINE=68368390; PubMed=4876100;
RA   Oliver L., Hartree A.S.;
RT   "Amino acid sequences around the cystine residues in horse growth
RT   hormone.";
RL   Biochem. J. 109:19-24(1968).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; U02929; AAA21027.1; -.
DR   HSSP; P01246; 1BST.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26
FT   CHAIN        27    216       SOMATOTROPIN.
FT   DISULFID     78    189
FT   DISULFID    206    214
SQ   SEQUENCE   216 AA;  24423 MW;  37AB3173834D11AC CRC64;

  Query Match             38.5%;  Score 306.5;  DB 1;  Length 216;
  Best Local Similarity   65.2%;  Pred. No. 4.1e-23;
  Matches   60;  Conservative   14;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db         27 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 85
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Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL 93
               |: ::| ||:|::|||| ||||||||| ||||
Db          86 PTGKDEAQQRSDMELLRFSLLLIQSWLGPVQL 117


RESULT 13
SOMA_GALSE
ID   SOMA_GALSE     STANDARD;      PRT;   217 AA.
AC   Q9GKA1;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1.
OS   Galago senegalensis (Northern lesser bushbaby).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Strepsirhini; Galagonidae; Galago.
OX   NCBI_TaxID=9465;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   PubMed=11141192;
RA   Adkins R.M., Nekrutenko A., Li W.-H.;
RT   "Bushbaby growth hormone is much more similar to nonprimate growth
RT   hormones than to rhesus monkey and human growth hormones.";
RL   Mol. Biol. Evol. 18:55-61(2001).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   entities requires a license agreement (See http://www.isb-sib.ch/announce/
CC   or send an email to license@isb-sib.ch).
CC   ---------------------------------------------------------------------
DR   EMBL; AF292938; AAG44952.1; -.
DR   HSSP; P01246; 1BST.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    217       SOMATOTROPIN.
FT   DISULFID     79    190       BY SIMILARITY.
FT   DISULFID    207    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24481 MW;  2FB61CD31136F005 CRC64;

  Query Match             38.5%;  Score 306.5;  DB 1;  Length 217;
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  Best Local Similarity   65.2%;  Pred. No. 4.1e-23;
  Matches   60;  Conservative   14;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:||| ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db         28 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNTQAAFCFSETIPA 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL 93
              |: ::| ||:|::|||| ||||||||| ||||
Db         87 PTGKDEAQQRSDMELLRFSLLLIQSWLGPVQL 118


RESULT 14
SOMA_NYCPY
ID   SOMA_NYCPY     STANDARD;      PRT;   217 AA.
AC   Q9GMB2;
DT   28-FEB-2003 (Rel. 41, Created)
DT   28-FEB-2003 (Rel. 41, Last sequence update)
DT   28-FEB-2003 (Rel. 41, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1.
OS   Nycticebus pygmaeus (Pygmy slow loris).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Strepsirhini; Loridae; Nycticebus.
OX   NCBI_TaxID=101278;
RN   [1]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Liver;
RA   Wallis O.C., Zhang Y.P., Wallis M.;
RT   "Cloning and characterisation of the gene encoding slow loris growth
RT   hormone.";
RL   Submitted (AUG-2000) to the EMBL/GenBank/DDBJ databases.
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ---------------------------------------------------------------------
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CC   ---------------------------------------------------------------------
DR   EMBL; AJ297562; CAC03504.1; -.
DR   HSSP; P01246; 1BST.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
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FT   SIGNAL        1     27       BY SIMILARITY.
FT   CHAIN        28    217       SOMATOTROPIN.
FT   DISULFID     79    190       BY SIMILARITY.
FT   DISULFID    207    215       BY SIMILARITY.
SQ   SEQUENCE   217 AA;  24395 MW;  7FE90D77E59085F6 CRC64;

  Query Match             38.5%;  Score 306.5;  DB 1;  Length 217;
  Best Local Similarity   65.2%;  Pred. No. 4.1e-23;
  Matches   60;  Conservative   14;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db         28 FPAMPLSSLFANAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 86

Qy         62 PSNREETQQKSNLELLRISLLLIQSWLEPVQL 93
              |: ::| ||:|::|||| |||||||||| ||||
Db         87 PTGKDEAQQRSDMELLRFSLLLIQSWLGPVQL 118


RESULT 15
SOMA_MOUSE
ID   SOMA_MOUSE     STANDARD;      PRT;   216 AA.
AC   P06880;
DT   01-JAN-1988 (Rel. 06, Created)
DT   01-JAN-1988 (Rel. 06, Last sequence update)
DT   15-MAR-2004 (Rel. 43, Last annotation update)
DE   Somatotropin precursor (Growth hormone).
GN   GH1 OR GH.
OS   Mus musculus (Mouse).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX   NCBI_TaxID=10090;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=85261358; PubMed=2991252;
RA   Linzer D.I.H., Talamantes F.;
RT   "Nucleotide sequence of mouse prolactin and growth hormone mRNAs and
RT   expression of these mRNAs during pregnancy.";
RL   J. Biol. Chem. 260:9574-9579(1985).
RN   [2]
RP   SEQUENCE FROM N.A.
RC   STRAIN=FZTDU; TISSUE=Liver;
RX   MEDLINE=96194803; PubMed=8647448;
RA   Das P., Meyer L., Seyfert H.-M., Brockmann G., Schwerin M.;
RT   "Structure of the growth hormone-encoding gene and its promoter in
RT   mice.";
RL   Gene 169:209-213(1996).
RN   [3]
RP   SEQUENCE FROM N.A.
RC   TISSUE=Pituitary;
RX   MEDLINE=22388257; PubMed=12477932;
RA   Strausberg R.L., Feingold E.A., Grouse L.H., Derge J.G.,
RA   Klausner R.D., Collins F.S., Wagner L., Shenmen C.M., Schuler G.D.,
RA   Altschul S.F., Zeeberg B., Buetow K.H., Schaefer C.F., Bhat N.K.,
RA   Hopkins R.F., Jordan H., Moore T., Max S.I., Wang J., Hsieh F.,
RA   Diatchenko L., Marusina K., Farmer A.A., Rubin G.M., Hong L.,
RA   Stapleton M., Soares M.B., Bonaldo M.F., Casavant T.L., Scheetz T.E.,
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RA   Brownstein M.J., Usdin T.B., Toshiyuki S., Carninci P., Prange C.,
RA   Raha S.S., Loquellano N.A., Peters G.J., Abramson R.D., Mullahy S.J.,
RA   Bosak S.A., McEwan P.J., McKernan K.J., Malek J.A., Gunaratne P.H.,
RA   Richards S., Worley K.C., Hale S., Garcia A.M., Gay L.J., Hulyk S.W.,
RA   Villalon D.K., Muzny D.M., Sodergren E.J., Lu X., Gibbs R.A.,
RA   Fahey J., Helton E., Ketteman M., Madan A., Rodrigues S., Sanchez A.,
RA   Whiting M., Madan A., Young A.C., Shevchenko Y., Bouffard G.G.,
RA   Blakesley R.W., Touchman J.W., Green E.D., Dickson M.C.,
RA   Rodriguez A.C., Grimwood J., Schmutz J., Myers R.M.,
RA   Butterfield Y.S.N., Krzywinski M.I., Skalska U., Smailus D.E.,
RA   Schnerch A., Schein J.E., Jones S.J.M., Marra M.A.;
RT   "Generation and initial analysis of more than 15,000 full-length
RT   human and mouse cDNA sequences.";
RL   Proc. Natl. Acad. Sci. U.S.A. 99:16899-16903(2002).
CC   -!- FUNCTION: Plays an important role in growth control. Its major
CC       role in stimulating body growth is to stimulate the liver and
CC       other tissues to secrete IGF-1. It stimulates both the
CC       differentiation and proliferation of myoblasts. It also stimulates
CC       amino acid uptake and protein synthesis in muscle and other
CC       tissues.
CC   -!- SUBCELLULAR LOCATION: Secreted.
CC   -!- SIMILARITY: Belongs to the somatotropin/prolactin family.
CC   ----------------------------------------------------------------------
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CC   or send an email to license@isb-sib.ch).
CC   ----------------------------------------------------------------------
DR   EMBL; X02891; CAA26650.1; -.
DR   EMBL; Z46663; CAA86658.1; -.
DR   EMBL; BC061157; AAH61157.1; -.
DR   PIR; B23911; STMS.
DR   HSSP; P01246; 1BST.
DR   MGD; MGI:95707; Gh.
DR   InterPro; IPR001400; Somatotropin.
DR   Pfam; PF00103; hormone; 1.
DR   PRINTS; PR00836; SOMATOTROPIN.
DR   PROSITE; PS00266; SOMATOTROPIN_1; 1.
DR   PROSITE; PS00338; SOMATOTROPIN_2; 1.
KW   Hormone; Pituitary; Signal.
FT   SIGNAL        1     26       BY SIMILARITY.
FT   CHAIN        27    216       SOMATOTROPIN.
FT   DISULFID     78    189       BY SIMILARITY.
FT   DISULFID    206    214       BY SIMILARITY.
SQ   SEQUENCE   216 AA;  24716 MW;  98666A3AE25D65FC CRC64;

  Query Match             38.2%;  Score 304.5;  DB 1;  Length 216;
  Best Local Similarity   64.8%;  Pred. No. 6.5e-23;
  Matches   59;  Conservative   14;  Mismatches   17;  Indels    1;  Gaps    1;

Qy          2 FPTIPLSRLFDNAMLRAHRLHQLAFDTYQEFEEAYIPKEQKYSFLQNPQTSLSFSESIPT 61
              || :||| || ||:|||  ||||| |||:||| ||||: |:|| :|| | :  |||:||
Db         27 FPAMPLSSLFSNAVLRAQHLHQLAADTYKEFERAYIPEGQRYS-IQNAQAAFCFSETIPA 85
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Qy          62 PSNREETQQKSNLELLRISLLLIQSWLEPVQ 92
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Db          86 PTGKEEAQQRTDMELLRFSLLLIQSWLGPVQ 116
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Search completed: July 15, 2004, 16:36:26
Job time : 10.3545 secs